

THE POST-MINIMALIST SYMPHONY: LARGE-SCALE FORM IN MUSIC BY

JOHN ADAMS, PHILIP GLASS, AND AARON JAY KERNIS

by

Jingxuan Wang

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A Thesis Submitted to the Faculty of the

FRED FOX SCHOOL OF MUSIC

In Partial Fulfillment of the Requirements

For the Degree of

MASTER OF MUSIC


In the Graduate College

THE UNIVERSITY OF ARIZONA

2019

THE UNIVERSITY OF ARIZONA
GRADUATE COLLEGE

As members of the Master's Committee, we certify that we have read the thesis prepared by Jingxuan Wang, titled *The Post-Minimalist Symphony: Large-Scale Form in Music by John Adams, Philip Glass, and Aaron Jay Kernis* and recommend that it be accepted as fulfilling the dissertation requirement for the Master's Degree.



Dr. Donald G Kinser-Traut

Date: 12/2/19



Dr. Jay Rosenblatt

Date: 12-2-2019




Dr. Matthew Mugmon

Date: 12/2/19

Final approval and acceptance of this thesis is contingent upon the candidate's submission of the final copies of the thesis to the Graduate College.

I hereby certify that I have read this thesis prepared under my direction and recommend that it be accepted as fulfilling the Master's requirement.



Dr. Donald G Kinser-Traut
Master's Thesis Committee Chair
Fred Fox School of Music

Date: 12/2/19

ARIZONA

ACKNOWLEDGMENTS

I would like to thank my family—in particular, my mother for her love and support, and especially for the sacrifices she made to give me the opportunities that brought me where I am today. I have to say that it is my mom who made everything happen!

I owe special gratitude to my professor and advisor, Dr. Donald Traut, for his assistance, encouragement, and instruction. Because of him, I broke through my ignorance about contemporary music, and I thank him for offering this opportunity to complete this work. He and Dr. Matthew Mugmon led me to a whole new world and opened the door for me to appreciate a wider range of music than I had ever known about. I am deeply grateful to them, as well as to Dr. Pamela Decker, for their guidance, and for helping me make this a better thesis. I would also like to thank the faculty at the Fred Fox School of Music, in particular Dr. Jay Rosenblatt and Dr. John Brobeck.

Finally, I would like to thank all the people around me for their support and love, and their infinite tolerance and encouragement, which made me what I am today. Years of hard work, of experiencing so many difficulties overseas, of staying up late, and of shedding tears, have paved the way for my success. Although this thesis may be the most challenging thing I have accomplished as a student life, I have tried my best and hope I can be a better scholar, a more sensitive musician, and a more proficient theorist in the future.

DEDICATION

献给我的家人

特别是我的母亲

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ABSTRACT

My thesis focuses on the materials and structure of the first movements of three large-scale symphonic works by prominent minimalist and post-minimalist composers. I selected these composers and their works because each indicates a different side of both minimalism and symphonic composition. First, John Adams' *Harmonielehre* features the repeated chords typical of the minimalist style as well as repetitive motor rhythms, but they do not follow a strict repetition scheme. In addition, the structure of *Harmonielehre* is more appropriate to the sonata-allegro format of the first movement of a symphony compared to the other two works. Next, Philip Glass re-interpreted *Low* by David Bowie and Brian Eno with his signature minimalist/repetitive treatment but in an orchestral arrangement. Symphony No. 1 ("Low") features surprising polytonal complexities, long subtle rhythmic cycles, and his most basic minimalist technique: the additive process. As in many other minimalist pieces, this piece exploits one form of continuity by slowly growing from a sparse rhythmic framework to a structure that also includes contrasting sections. Finally, the "Continuous Wave," the first movement of *Symphony in Waves*, by Aaron Jay Kernis, makes use of another continuous form through an uninterrupted rhythmic pattern flowing from the beginning to the end of the first movement. As the youngest of the three composers, the influence of his teacher, John Adams, brings variety and dynamic energy to his music.

CHAPTER ONE

INTRODUCTION

1.1 Summary of Thesis.

After World War II, new possibilities emerged in the musical world. One possibility, most prominently developed between 1960 and 1970 and eventually joining mainstream music in the late twentieth-century, was minimalism. The core of it is to build on a simple set of materials through various procedures. Minimalism is a movement that is defined by pieces where bits of the material are repeated and slowly evolve over time. It is both an influential and controversial trend in recent composition.

Alongside the rise of the neo-romantic symphony in the 1970s and 1980s, exemplified by the works of Rochberg, Druckman, Rouse, and many others, composers such as John Adams, Philip Glass, and Adams's student Aaron Jay Kernis were among the first composers to bring the post-minimalist aesthetic to large orchestral works such as the symphony. This thesis will focus on the materials and structure of the first movements of three large-scale symphonic works by prominent minimalist or post-minimalist composers. I selected these composers and their works to examine a different side of both post-minimalist and symphonic composition.

John Adams' *Harmonielehre* features repeated chords typical of minimalist style as well as repetitive motor rhythms, yet these rhythms do not follow a strict repetition scheme. The structure is more appropriate to the sonata-allegro format of the first movement of a symphony compared to the other two works. Philip Glass re-interpreted *Low* by David Bowie and Brian Eno with his signature minimalist/repetitive treatment but in an orchestral arrangement. Symphony No. 1 ("Low") features surprising polytonal

complexities, long subtle rhythmic cycles, and his most basic technique, the additive process. Like in many other pieces, this piece utilizes one form of continuity by slowly growing from a sparse rhythmic framework while incorporating contrasting sections. “Continuous Wave,” the first movement of *Symphony in Waves*, by Aaron Jay Kernis, makes use of another continuous form by utilizing an uninterrupted rhythmic pattern flowing from the beginning to the end of the first movement. As the youngest of the three composers, Kernis’s music is heavily influenced by his teacher, Adams. As a result, his music is full of a wide variety and dynamic energy.

The title of this thesis refers to the post-minimalist symphony, so here I will briefly discuss that term. While post-minimalist is difficult to define, it could be interpreted as an attempt to move beyond the basic techniques of minimalism. When elements such as direct references to popular music or romantic lyricism enter, post-minimalist become an appropriate term. Kernis praised Adams’s work and believed that he takes minimalism to new heights rather than continuing the pure classical formalism of early minimalism.¹ In *Harmonielehre*, for instance, Adams combined a minimalist style with romantic gestures, such as a lyrical secondary section. “This refusal to remain consistent frustrates critics, who alternately define Adams as neo-Romantic, neo-Expressionist, postmodernist or anti-modernist. All of this criticism strikes Adams as somewhat irrelevant. ‘Call it postmodern,’ [Adams] says, although he admits, ‘I don’t like to be called a minimalist.’”²

¹ John Adams and Aaron Jay Kernis, “John Adams: An Interview with Aaron Jay Kernis,” *Conjunctions* 19 (1992): 174.

² Richard Stayton, “The Trickster of Modern Music: Composer John Adams Keeps Reinventing Himself, to Wilder and Wilder Applause,” *Los Angeles Times*, June 16, 1991.

The current research on minimalist music, particularly in music theory, is limited. This is because it is still a relatively new aesthetic and standard techniques of music theory, such as Schenkerian analysis, do not seem to lend themselves to large, relatively static structures. Rhythm is an important angle to consider in analyzing minimalism. Kyle Gann wrote, “We can at least say that it was a near-universal trait of minimalism to never use a wide variety of rhythms; you might proceed in 8th-notes, or 8ths and quarters, or whole notes with fermatas, but you do not get the kind of mercurial rhythmic variety one would hear in any nineteenth-century classical composition.”³ Despite not having been explored in depth by theorists to the extent of earlier music, minimalism has proven to be a new frontier in contemporary music development and a crucial step forward for some composers in exploring new compositional techniques. My research here centers on a comprehensive analysis of post-minimalist compositional techniques and how the aforementioned three composers imported minimalist aesthetics (such as repetition as well as rhythmic and harmonic stasis) into the symphonic tradition.

1.2 Historical Perspectives.

Minimalist music has been highly influential, growing from somewhat of a fringe movement associated with composers La Monte Young (b. 1935), Terry Riley (b. 1935), Steve Reich (b. 1936), and Philip Glass (b. 1937) to a powerful force in late twentieth and early twenty-first century music. Each of these four pioneers developed his own individual styles and core techniques. At the same time, these core techniques were

³ Kyle Gann, “Minimal Music, Maximal Impact: Minimalism's Immediate Legacy: Postminimalism,” *New Music Box: The Web Magazine from the American Music Center*, November 1, 2001, accessed Apr 30, 2019, <https://nmbx.newmusicusa.org/minimal-music-maximal-impact/>.

applied and developed by other figures. Tape loops, static harmony, drones, phase shifting, pattern repetition, and additive processes define early minimalism. The music of these and other composers can be viewed in contrast with the complex integral serialism of the post-WWII avant-garde including Boulez, Stockhausen, Martino, and Babbitt.

As for the term post-minimalist, there is no specific boundary between it and minimalism. When compared to post-minimalism, minimalist works are simpler and more rigorous in their development of a single idea. Minimalist works rely heavily on process techniques that follow strict rules and repetition focused often on a small motive that grows into a whole piece without mixing in any extra materials or borrowing from different compositional styles and aesthetics. The early works often lack embellishment, and many present similar repetitions of a single musical idea. As an example, Reich used tape loops to create phasing patterns, seen in his famous compositions, *It's Gonna Rain* and *Come Out*. *In C* by Terry Riley is a collection of tonal objects that are combined in order. The presence of tonal materials in early works frequently creates an initial sense of familiarity. Actually, in most cases, the music is independent of functional harmony. Composers choose the basic elements of tonality as the raw materials build on unusual musical processes rather than writing tonal music. The early minimalists emphasized extensive repetition, but compared with post-minimalists, they often lacked a sense of musical development. Peter Perret describes these early works as follows: "Composers take these musical patterns and repeat them over and over and over and over..." minimalist composers like Philip Glass use patterns of notes to create a mood. Therefore,

minimalist pieces may sound like a broken record, with no change really happening.”⁴

Many of the early pieces, as highlighted previously, followed strict procedures once they started. I listed a table of the typical techniques for each composer of four pioneers in the next chapter, as these are widespread even in post-minimalism.

In contrast to early works, the post-minimalist aesthetic is more open and inclusive, and the works blend elements of minimalism with the elements and techniques of other musical styles and aesthetics. Post-minimalist composers draw on many sources as they relate to various styles and traditions. “*Low*” *Symphony* by Glass is an example, in which he adapts songs from the rock album *Low* by David Bowie and Brian Eno into a symphonic structure. Parallel to the rise of the neo-romantic symphony, John Adams, Philip Glass, and Aaron Jay Kernis were among those composers who brought the minimalist aesthetic to works for large ensembles, specifically the symphony. Of course, the symphony as a genre has a long history of established norms, including an emphasis on drama and narrative. It has long been a convention in the symphony (although there are many exceptions) to include a fast first movement in sonata form. With its inherent conflicts between primary and secondary key areas, assertive and lyrical thematic types, fragmented motivic development, and large-scale departure from and return to the opening material, the dramatic arc of sonata form makes for an excellent opening movement scheme.

By contrast, the characteristics of minimalism would seem to be at some distance from these symphonic norms. In minimalism, we expect small motivic units deployed in

⁴ Peter Perret, “Grab It, a Wild Evening of Avant-Pop Music at Krankies’ Warehouse,” CVNC, 20 August 2010, Winston-Salem, NC, accessed July 30, 2019, <http://cvnc.org/articleprint.cfm?articleid=826>.

a repetitive manner over a long time span, with a non-narrative and non-teleological thrust including an overall lack of contrast between key or thematic areas. There is generally a lack of emphasis on constant musical variation. Minimalist composers focus on simpler and more repetitive musical lines. Traditional compositional techniques focus on melodic fragments repeated sparingly, while minimalist styles break from this convention and develop patterned sequences through extensive repetition, dynamic growth, and subtle harmonic changes. Gradual harmonic changes help to move minimalist pieces forward and evolve over long periods of time even as these pieces maintain their musically static landscapes.

With these points in mind, the remainder of this thesis is divided in the following way. In Chapter 2, the analytical overview, I introduce several minimal techniques and compare them with the technical features of the common practice period (CPP). In chapters 3 through 5, I explore three works in order and discuss their respective techniques and illustrate them with examples.

CHAPTER TWO

ANALYTICAL OVERVIEW

2.1 Minimalist Similarities and Differences with Common Practice Style.

- 2.1.1 Minimalist Techniques

Minimalist techniques are more easily identified in their early development in the 1960s. However, these techniques became an aesthetic orientation that permeates many genres and styles in the years following 1960. As mentioned above, the core feature of minimalism is the use of small pieces of material that are repeated and that slowly evolve in the course of a large piece. The focus is often on a short melodic pattern that is repeated, along with shifts in rhythm and harmony. As a result, many works are usually long due to the typically lengthy evolution of the starting material. The four leading American composers who created and developed signature minimalist composition methods were La Monte Young, Terry Riley, Steve Reich, and Philip Glass. Table 2.1 lists characteristics of the music of these composers from K. Robert Schwarz's book,⁵ but of course each technique listed does not belong exclusively to the composer listed next to it.

⁵ Robert K. Schwarz, *Minimalists* (London: Phaidon Press limited, 1996).

Table 2.1. Prominent Features of Four Minimalist Composers' Techniques

Composer	Technique	Description
La Monte Young	Drones	Sustained tones, notes, or tone clusters
La Monte Young	Static harmony	The harmonic material remains largely constant throughout a piece.
Terry Riley	Pattern repetition	Repetitive rhythm/melodic patterns and reiteration of musical phrases or smaller units
Terry Riley	Tape loops	Pre-recorded sound on tape used and combined, sometimes creating dense layers of sound
Steve Reich	Phase shifting	Two identical phrases begin at the same time, but the tempo/rhythm of one gradually changes.
Philip Glass	Additive process	A basic pattern is lengthened by adding additional notes.
Philip Glass	Circular rhythm	A fixed rhythmic pattern which is repeated

According to Kyle Gann,⁶ minimalists emphasize an overall smoothness, a sense of the whole rather than the parts, and a sense of arrangement rather than composition. And repetition perhaps is the most stereotypical aspect of minimalist music.⁷ However, it is not only about a repetition of one cell; it involves slight changes in the process of self-replication of a short pattern (comprised of minimal materials that are different, yet related patterns) while staying continuous. Many minimalist works rely on motoric rhythms, and it is worth noting that the avoidance of multiple rhythms is a near-universally feature of minimalism. Instead, composers use the steady beat to write drone music, such as La Monte Young's *The Well-Tuned Piano*, or pulsive music, such as John Adams' *Shaker Loops*.⁸ The minimalist rhythm combinations are affected by Indian

⁶ Kyle Gann, "Minimal Music, Maximal Impact: Minimalism's Immediate Legacy: Postminimalism," *New Music Box: The Web Magazine from the American Music Center*, November 1, 2001, accessed Apr 30, 2019, <https://nmbx.newmusicusa.org/minimal-music-maximal-impact/>.

⁷ Gann, *Ibid.*

⁸ *Ibid.*

music rhythm, especially the ones written by Glass, by using simple melodies and rhythms as raw material. The process involves the repetition of these materials through increasing or reducing them, then forming a way to lengthen them. This is known as the additional process, a straightforward idea that can range from simple to complex. For example, say a musical phrase starting with three notes repeated several times. The additional process would take place when a subsequent measure of four notes is added (repeated as well), then five, six, and so on. Glass engages this technique in his Symphony No. 1 and gives a pretty decent explanation, “A simple figure can expand and then contract in many different ways, maintaining the same general melodic configuration but, because of the addition (or subtraction) of one note, it takes on a very different rhythmic shape.”⁹ He denies that the addition process exists independently. When combining the addition process with cyclic structures or “repeating fixed rhythmic patterns of a particular length,” a magnificent and complex structure emerges.

Furthermore, minimalist music expresses the ideas and technologies by minimalist ensembles are based on the idea that everyone plays throughout (for instance, Terry Riley’s *In C*)¹⁰; the linear transformation is a summary of processes, such as additional structures, moving from one state to another. Recognizing that, in James Tenney’s *Chromatic Canon*, he moves from consonant (tonal) to dissonant (atonal) music; staying on a chord for a long duration or moving back and forth with a small number of chords is something minimalism composers use frequently. Extreme gradual changing between harmonies can be found. As proof, in the first movement of Glass’s

⁹ Philip Glass and Robert T. Jones, *Music by Philip Glass*, 58.

¹⁰ Ibid.

Symphony No. 1 (reh. 76). Here, the transformation from the F-sharp major triad goes to a D-sharp minor triad that occurs by changing one note at a time. Glass started the static harmonic progress in his early ensemble works which mostly stayed within one scale rather than harmony.

New techniques developed by Adams are gates, characterized by a sudden change of state, such as a change in tone, texture, speed or rhythm, etc gates change modes without modulation. Starting with his piano piece, Phrygian Gates, Adams then utilizes this technique in his pieces, such as *Harmonielehre*, often ¹¹; another is dovetailing structure. ¹² In contrast to the direct confrontation between structures caused by a sudden transformation in the concept of gates, the dovetailing structure tends to be a smoother and more mitigated process of transformation. Adams exploits this technique by connecting two sections in *Harmonielehre*. A dovetailing structure means that the end of each phrase overlaps with the beginning of the next one. This technique ensures the seamless operation of the music, keeping it flowing into transitions. As a fundamental principle in orchestral arrangements involving phase music, dovetailing structure connects the textures of two sections by having one instrument overlapping with a new contrasting phrase in other instruments. Complementary configurations and foreground rhythmic reiteration also come from Adams. ¹³ “Foreground” refers to the elements in the

¹¹ John Adams, “Phrygian Gates and China Gates,” The John Adams Official Website, accessed February 16, 2019, <https://www.earbox.com/phrygian-gates-china-gates/>.

¹² Alexander Sanchez-Behar, “Dovetailing in John Adams’ ‘Chain to the Rhythm’,” *Indiana Theory Review* 31, nos. 1-2 (2013): 88-114. See also Dan Warburton, “A Working Terminology for Minimal Music,” *Intégral* 2 (1988): 156.

¹³ Forest Glen Greenough, “Progressive Density in John Adams’ *Harmonielehre*: A Systematic Analytic Approach with Original Composition” (DA diss., University of Northern Colorado, 2005), 30-36.

multi-layer structure that attract the attention of most of the audience at any given moment, while the secondary elements are “background”.

- a. Foreground rhythmic configurations are generally manifested by rhythmic reiteration, creating an actual melody or a “perceived” melody. Through the application of different reiterated rhythmic values and metric modulation, John Adams creates a foreground motion that both accelerates and decelerates in *Harmonielehre*.
- b. Background rhythmic configurations fall into two subsets:
 - i. Complementary configurations, where multiple instrumental lines (usually from the same family) arpeggiate a chord in opposing directions, or where instrumental lines feature a similar arpeggio but with differing articulations.
 - ii. Overlapping configurations that are constructed by having similar rhythmic repetitions, with linear breaks at different points, and can be scalar or linear.

Johnson’s definition of minimalist style is based on the general definition of style in *The New Grove Dictionary*, in which R. J. Pascall describes the phenomenon of style in terms of its constituent form, harmony, and texture.¹⁴ Post-minimalist form is known for its continuous nature, and for its gradual development from the loose rhythmic framework (or as in *Symphony in Waves*, fade out after an imitated climax). These forms are usually shaped with uninterrupted rhythmic gestures overall flowing from the

¹⁴ Timothy Johnson, “Minimalism: Aesthetic, Style, or Technique?” *The Musical Quarterly* 78 (1994): 748. See also R. J. Pascall, “Style,” in Stanley Sadie, ed., *The New Grove Dictionary of Music and Musicians* (London: Macmillan, 1980).

beginning to the end of the work while each distinct part is still recognizable. Minimalist composers often use the layering technique weaving in and out of the main musical body (such as Reich's *Music for 18 Musicians*). This technique also helps the composers in shaping their texture, as the texture of minimalist music frequently consists of continuous pulses, which both "*Low*" *Symphony* and *Harmonielehre* demonstrate, and the interlocking rhythmic patterns, which we found in *Symphony in Waves*. These pulses and rhythmic patterns with bright tone colors and simple harmonics provide an energetic character to the music.

- 2.1.2 Common Practice Period

In the Western classical music tradition, the diatonic scale establishes almost all music that is considered tonal. The conventional concept of tonality relies on one single tonality that is to be considered as the primary key of the piece. A prominent tonal center organized triadically and hierarchically is the most significant in the tonal harmonic structure. Music of this era commonly begins and ends in the same key while being built on the most standard chord progression and cadence (perfect authentic cadence) of I-IV-V-I. Although tonality and harmony are clearly identifiable in minimalist music, they do not function the same way as in traditional tonal music; the traditional method of melodic formation is achieved through tension and relaxation, with many melodic gestures that lack flow and resolution. In traditional tonal music, modulation and tonicization provide musical shape.

Taking Kernis's *Symphony in Waves* as an example, the tonal center may change several times in ten measures whether by changing the key signatures continuously or by flexibly shuttling from one to the other through accidentals rather than changing the key

signatures. Musicologists Paolo Susanni and Elliott Antokoletz show the diversity of musical scales in the twentieth-century, which is no longer limited to the major and minor scales of the traditional tonal system. Instead, recent composers derive different types of harmonic structures from the formation of many different scales and intervals.¹⁵ The new harmonic structure help to weaken or even eliminate traditional tonality.

The music of the common practice period demonstrates a clear form, and contrasts between tonic and dominant and clear cadences. In terms of creation, composers pay attention to dramatic contrast and conflict and to the development of material, and homophonic texture is emphasized. In symphonic first movements, sonata form is commonly used, though style is not homogenous. Beethoven takes the basics of the classical style and makes them monumental and dramatic through scale.

The most obvious feature of a symphony is its form, especially of the first movement. Sonata form, which is based on the dramatic collocation and eventual settlement of contrasting keys to the home key is crucial in the evolution of the symphony. The first movement usually consists of an exposition in two or more themes where the primary theme is strongly placed in tonic and the secondary and closing themes are in the dominant or relative major.

¹⁵ Paolo Susanni, and Antokoletz Elliott, *Music and Twentieth-Century Tonality Harmonic Progression Based on Modality and the Interval Cycles* (New York: Routledge, Taylor & Francis Group), 3.

- 2.1.3 The Differences between Post-Minimal Techniques and Common Practice Style

Although they share some similarities, minimalist music and music from the common practice period clearly diverge from one another. One significant way is the story-like progression of common-practice music, including introductory material, development sections, climactic moments, and resolution. The challenge for post-minimalist composers is to use sustained notes or chords, that take the place of following conventions.

In the three works discussed in this thesis, although they all chose to write in sonata form, the transformation is that they did not adopt the traditional recapitulation of sonata form. These composers replace the recapitulation with a new section C, and the form is now an A-B-C form, which is a coherent straight line instead of a conventional circle. One could analyze the new “C” section as an “A” section, as they use similar materials. But due to the nature of repeating materials in minimalism works, it is clearer to label the last section as C. One feature of some sonata forms is the appearance of an introduction that is short, slow, and in the dominant, as well as a coda at the end of the movement. *Symphony in Waves* includes an introduction, but it is harmonically unstable, changing from C-major (I), A-flat major (VI), E-major (III), D-major (II), B-flat major (raised VII), to G-major (V) instead of staying on a single key (even though it ends up, eventually, on the dominant key), and it is fast rather than slow section.

One of the essential differences of post-minimalist music when compared to the common practice period is the use of rhythm. Classical music contains rich rhythmic patterns that emphasize the upbeat, changes in note value, etc. Metrical or divisive

rhythm, by far the most common Western music calculation of each time value, is a multiple or part of a fixed unit, and normal accents are regularly repeated, providing systematic bars. In Western notation, it is basically designated as a quarter note. By comparison, almost all Western classical music rhythms are simple because they stay in a simple meter, like 4/4 or 3/4 or shifting and overlapping of duple and triple beat patterns, and rarely utilize syncopation. In the twentieth-century, composers like Adams, Glass, and Kernis applied odd meters and techniques. These techniques include rhythmic cycles, additive rhythm, and mixed meter to create more complex rhythmic music. Adams and Kernis like to place a different time signature at the beginning of every few bars to create the ambience of an extremely irregular rhythm, something especially prevalent in Adams's music. Yet, Western classical music did not consist of such a complex rhythm cycle. Most Western music is based on divisive rhythms, while post-minimal music exists through many long-sustained notes to create the sense of regular rhythm disappearing. The regular rhythm gives the audience a chance to hear the sound as "a group," and the irregular rhythm highlights the "rapidly changing pitch relationships" which are grouped into "unrelated rhythm groups."¹⁶

- 2.1.4 Techniques that Exist in both Post-Minimalist and Common Practice Style

Although many differences exist between post-minimalist and common practice style, post-minimalism still carries on traditional compositional techniques.

¹⁶ Greg Sandow "A Fine Madness," in *The Pleasure of Modernist Music: Listening, Meaning, Intention, Ideology*, ed. Arved Mark Ashby (Rochester, NY: University of Rochester Press, 2004), 257.

1. Pedal Point

The pedal point harmony provides the tonal center to be addressed and some kind of harmony or accompaniment rather than just seeming silent. There are pieces that combine actual chords written with pedals, but these only combine pedals with tonal or modal harmonies. All three composers used this technique to connect two sections or figured bass in these three works.

2. Homophony

Traditional homophony has a distinct main melody line supported by the accompaniment. However, usually the highest voice acts as such the main melody line in the melody-dominated homophony, and the rest of the accompanying voices expressing a potential harmony. The homophony of contemporary music has mostly disappeared from use. Aside from the traditional interdependence between melody and chord pitches sharing the same tonal base, there may be a marked difference between the pitch material of melody and harmony. Adams and Kernis have both used these methods in *Harmonielehre* and *Symphony in Waves*, respectively. However, some traditional devices, such as repetitive chords, are still in use.

3. Tonality/ Diatonic

Major and minor triads have been the main force in almost all music from past to present times. The difference is whether they are more or less in proportion to the harmonic structure of a composition; some of the pieces are almost entirely from major and minor triads, whereas some are only of partly major and minor triads. Standard tonal music is restricted. Thus, the major triad and minor triads are the only two options for the tonic of a piece, for the reason that they are considered consonant

and stable. Oppositely, diminished or augmented triads are almost non-existent because they are discordant and unstable.

Minimalism can be defined as a style as well as an aesthetic. All three works in this thesis demonstrate the characteristics of the post-minimalist style. In terms of form, *Symphony in Waves* also utilizes the continuous form that was adopted in Riley's *In C*, where segments are played consecutively until the end. The texture of repetitive short rhythmic gestures in combination with the slowly varying and developing harmonic rhythm within the diatonic collection makes the music simple yet interesting. There is no extended melody line in the music, and the rhythm is mostly made of repeated sixteenth notes.

- 2.2 Problem to Address

By comparison, the two styles seem to contain quite a discrepancy, even if there are some similarities. Of course, the symphony as a genre has a long history of established norms, and the characteristics of minimalism would seem to be at some distance from these symphonic norms. The prospect of a suitable symphony piece presents a new challenge, for minimalist composers' simple repetition of the theme, or endless repetition, or repetition with varying rhythms was far from enough. How, then, do composers incorporate these minimalist (or post-minimalist) features into their large-scale symphonic works? How, in the context of a symphony, could such features replace the dramatic arc of sonata form, given that minimalism can be motionlessness and of very gradual change? With these questions in mind, my thesis focuses on the materials and structure of the first movements of three large-scale symphonic works by prominent post-minimalist composers.

These composers and their works that I have selected each show a different side of both post-minimalist and symphonic composition. Every composer has written a combination of the ideal post-minimalist symphony. The overall structure of all three works adopts the traditional iconic sonata structure with innovative ideas that develop into ABC form using minimalist techniques along with traditional techniques. These three symphonies and diatonic harmony are closely related, but in many respects, there are also obvious personal transformations and innovations. The contemporary situation in the last century meant that it was now problematic to draw a clear line between atonal and tonal music. The three pieces I will discuss have a clear tonal center (usually considered tonal), but they do not routinely use the traditional way of harmony. Rather, they use repetition to create more static harmonies.

The John Adamsian style blends minimalism, driving motor rhythms with chromaticism, and nineteenth-century harmonies. *Harmonielehre* is one of the major orchestra pieces of the late twentieth-century. It features the repeated chords typical of the post-minimalist style as well as repetitive motor rhythms, but they do not repeat mechanically, and each repetition is individual. Most of the music was built from traditional arpeggio figures and repeated block chords. The structure is more appropriate to the sonata-allegro format of the first movement of a symphony when compared to the other two works. The B section is a representative example that acts as a combination of traditional lyrical melodies and minimalist techniques.

Philip Glass re-interpreted *Low* by David Bowie and Brian Eno with his signature minimalist/repetitive treatment but in an orchestral arrangement. Symphony No. 1 (“Low”) features surprising polytonal complexities, long subtle rhythmic cycles, and his

most basic minimalist technique: the additive process. As in many other minimalist pieces, this piece operates one form of continuity by slowly growing from a sparse rhythmic framework to a structure that also includes contrasting sections. The acoustics of Glass's harmony and the rich texture of music are the noteworthy differences between the two composers. Functional harmony is once again part of Glass's music, as he converted interest in more traditional forms and how his music worked in them.

"Continuous Wave," the first movement of *Symphony in Waves*, by Aaron Jay Kernis makes use of another continuous form through an uninterrupted rhythmic pattern flowing from the beginning to the end of the first movement. As the youngest of the three composers, Kernis is influenced by his teacher Adams, bringing variety and dynamic energy to his music. Kernis's works include examples of his eclectic influences which range from common practice period to now, making his music colorful and diversified. The application of traditional harmony and the perfect collision of lyricism and syncopation fully demonstrate his music to be "rich in possibilities."

In the three works discussed in this thesis, the composers followed the expectations of symphonies as multi-movement works. According to Carl Czerny, traditional symphonies should have four movements of "an *Allegro* (with or without an *Introduction*); an *Adagio* or *Andante*; a *Scherzo* or *Minuet*; and a *Finale*."¹⁷ Although none of these three works is a four-movement symphony, they do contain the fast, slow, dance, and finale order. In *Harmonielehre*, Adams has the three parts of a fast movement, a slow movement, and a fast movement with slow parts in the middle, similar to the idea

¹⁷ Carl Czerny, *School of Practical Composition: Complete Treatise on the Composition of All Kinds of Music Both Instrumental and Vocal, Together with a Treatise on Instrumentation* (New York: DaCapo Press, 1979).

of having an *Allegro*, and *Adagio*, and a *Finale* movement. In his first symphony, Glass has a long and fast first movement, similar to an *Allegro* movement, followed by a short energetic movement that is like a *Scherzo*, and finally a slow finale in the tradition of a closing *Adagio*. As a composer who is especially intrigued with the “expansive landscape” of classical forms in Mozart, Haydn, and Beethoven, Kernis stays close to the traditional form in both the first movement and the large scale form, as he saw the possibility sonata-form offers composers to include a “wide range of affects and thematic expression”¹⁸ within one movement. In *Symphony in Waves*, the second and the fourth movements are shorter and have lighter orchestration, with the second being a *Scherzo* and the fourth an *Intermezzo*. The third movement, “Still Movement,” is slow and the longest movement in the arch form of the entire symphony (recalling the third movement of Berlioz’s *Symphonie Fantastique*), and the fifth movement, *Finale*, is another fast movement that has similar length and characteristics to the first movement. Thus, all three works at least have a movement suggesting sonata form, a slow movement, and a *Finale*. The sonata form here has been transformed as an A-B-C form, forming a coherent straight line from A to B then going forward to section C, instead of a conventional circle, returning from A to B and back to A’. In looking at the sonata form specifically, all three composers decide to keep the three large sections. More details will be discussed in the next three chapters.

¹⁸ Leta Miller, *Aaron Jay Kernis: American Composers* (Champaign: University of Illinois Press, 2014), 59.

CHAPTER THREE

JOHN ADAMS — “*Harmonielehre*”

3.1. Theoretical Framework

To go into more detail examining these works, the first piece I will be discussing is *Harmonielehre*, a large orchestral work composed by the American composer, John Adams, in 1985 and premiered on March 21 of 1985. Born on February 15, 1947, in Worcester County, Massachusetts, Adams was largely influenced by the music culture of New England from an early age. A graduate of Harvard University (B.A. 1969, M.A. 1972), Adams started composing when he was ten.¹⁹ While at Harvard, Adams studied composition within Leon Kirchner, Roger Sessions, Earl Kim, and David Del Tredici.²⁰

Adams is often regarded by the public as a minimalist or post-minimalist composer, but he considers himself more of a post-style composer, as his post-minimalist works are not only repetitive with short motives but retain a complete musical structure. As a composer who has always been “really lov[ing]—and still lov[ing]—the classical tradition, whether it’s Bach or Messiaen,” Adams is interested in blending new styles within the context of the larger conventions of Western art music. “I didn’t think [classical music] was a dead tradition, or even an endangered one,”²¹ said Adams. Listeners can often hear the combination of the tonal characteristics: most of Adams’s

¹⁹ John Adams, “Biography,” The John Adams Official Website, accessed February 16, 2019, <https://www.earbox.com/john-adams-biography/>.

²⁰ John Warrack and West Ewan, *The Oxford Dictionary of Opera* (Oxford: Oxford University Press, 1992), 782.

²¹ Thomas May, *The John Adams Reader: Essential Writings on an American Composer* (New Jersey: Amadeus Press, 2006), 9.

orchestral works have a clear tonality, but with chordal progressions and rhythmic organization divorced from the traditional system. Adams is also a composer who predominantly writes for classical instrumentations such as orchestras, string quartets, and piano solos. As a consequence, Adams's music is well accepted by audiences of classical music because his music not only contains minimalist color, but also emphasizes classical elements. And although his operas such as *Nixon in China* (1987) and *Doctor Atomic* (2005) are prominent, Adams' instrumental works, such as his piano work *Phrygian Gates* (1977), string work *Shaker Loops* (1978), along with the symphonies *Harmonium* (1981) and *Naïve and Sentimental Music* (1998), are crucial pieces in the twentieth-century music repertoire.²²

In 1985, John Adams created the symphony *Harmonielehre*. Adams himself regards this work as a symphony rather than simply a work for orchestra.²³ For Adams, it was a sudden inspiration that sparked this work. As the composer writes, in his autobiography *Hallelujah Junction*:

At what seemed like the absolute nadir of my creative block I'd had a vivid dream in which I was crossing the San Francisco Bay Bridge. In that dream I looked out to see a huge oil tanker sitting in the water. As I watched, it slowly rose up like a Saturn rocket and blasted out of the bay and into the sky. I could see the rust-colored metal oxide of its hull as it took off. Shortly after, possibly the very next day, I sat down in my studio to find, almost as if they were waiting for me, the powerful pounding E-minor chords that launch the piece. From there it proceeded to take shape with great speed, almost as if the floodgates had been opened and nearly two years of pent-up energy and ideas came rushing forth.²⁴

²² Adams, "Biography," The John Adams Official Website, accessed February 16, 2019, <https://www.earbox.com/john-adams-biography/>.

²³ John Adams, *Hallelujah Junction: Composing an American Life* (New York: Farrar, Straus, and Giroux, 2008), 129.

²⁴ Adams, *Hallelujah Junction: Composing an American Life*, 130.

On his official website *Earbox*, he explains in detail the story behind the work: the title of this piece is a German word which means “treatise on harmony,” or “the book of harmony.” Adams was explicitly referring to a work of the same name: “a huge study of tonal harmony, part textbook, part philosophical rumination, that Arnold Schoenberg published in 1911 just as he was embarking on a voyage into unknown waters.” During Adams’ study at Harvard with Leon Kirchner, who himself had been a student of Schoenberg in Los Angeles during the 1940s, Adams became highly sensitized to what Schoenberg and his art represented.²⁵

Harmonielehre, which lasts about 40 minutes, contains three movements; the second and third movements are titled “The Anfortas Wound” and “Meister Eckhardt and Quackie,” but the first is untitled.

²⁵ John Adams, “Harmonielehre,” The John Adams Official Website, accessed February 16, 2019, <https://www.earbox.com/harmonielehre/>.

Table 3.1. The Form of Adams, *Harmonielehre*, First movement

Sections	Measures and Track Time ²⁶	Measures and Track Time	Measures and Track Time
A	1–114 (0:00-2:35) E-minor	115–186 (2:36-4:25) E-minor	187–258 (4:26-6:16) (235–258 transition) E-flat Major
	1. Mixed meters 2. Motor rhythm 3. Complementary configurations 4. Foreground rhythmic reiteration	1. Complementary configurations 2. Foreground rhythmic recitation (composite).	1. Superimposition \Rightarrow all eighth notes 2. Additive rhythmic structure, modal sequences.
B	259–437 (6:17-13:44) (428–437 transition) E-flat minor/major, D-minor/major, E-minor/major, B-flat major, C-major, G-minor.		
	1. The solo voice passed among different instruments: alternated by Cellos, Horns, Flutes, Clarinets, Cellos, Violins, Celesta) 2. Multi-configurations, background rhythmic configurations.		
C	438–497 (13:45-15:18) E-flat Major	498–595 (15:19-17:20) E-minor	
	1. Motor rhythm 2. Arpeggio, eighth notes	1. Foreground rhythmic reiteration 2. Background rhythmic configurations	

Table 3.1 summarizes the large-scale formal divisions of the first movement of Adams' *Harmonielehre*, which follows a straightforward three-part division. As we see here, the large A section itself subdivides into three parts. The piece begins with driving motor rhythms (mm. 1–114) moving to a more peaceful section (mm. 115–186), then begins to transition to the B section (mm. 235–258). The B section (mm. 259–437) features a romantic lyric solo that arises in the cello then shifts to other instruments. While section C features a return to driving motor rhythms (mm. 438–497), it is different than the A section. The contrast between foreground rhythmic reiteration and background rhythmic configurations is even more striking in section C. Almost all of the voices except the strings of the C section are playing driving motor rhythms while the strings remain uninterrupted in playing arpeggios. Meanwhile, the music gradually crescendos

²⁶ Title: Adams: *Harmonielehre* - Short Ride in a Fast Machine. Conductors: Michael Tilson Thomas, San Francisco Symphony. SFS Media. Catalogue No: SFS0053. UPC: 821936005323. 2012.

and accelerates as it approaches the end. The music toward the end of the piece (mm. 498–595) sounds pressing and more intense with its persistent rhythm. The first section is full of dynamic rhythm and a wide variety of rhythm and melody, where Adams shows the iconic motor rhythms at the opening that are strongly placed in tonic as if it is the primary theme of traditional exposition. The middle section is an adagio and lyrical section (different from the first section, as the development in sonata form). The third section combines dynamic rhythm and dramatic conclusion, especially in the last twelve measures. Though it does not count as a coda in strict significance, it has the properties of the coda — the composer imitates the materials from the movement proper in these last twelve measures. The twelve measures could be considered as a coda or a transient recapitulation. The first section is the most omnifarious in melody, rhythm, timbre, and creative techniques compared to the other two sections.

3.2 Prominent Features

- 3.2.1 Foreground Rhythmic Reiteration and Background Rhythmic Configurations

Adams manipulates compositional methods of traditional music in his minimalist writing. He emphasizes lyricism along with rhythmic changes that keep that element complex. The driving motor rhythms of the first movement are characterized by regular pulsations of fast rhythm (foreground rhythmic configurations), small melodic fragments repeated seamlessly and continuously (background rhythmic configurations) throughout the entirety of the whole piece, and a primary harmony consisting mainly of diatonic material. According to Greenough's description, foreground rhythmic configurations are

an integral part of presenting the main rhythm and the main melody, while background rhythmic configurations accompany foreground rhythmic configurations. Although background rhythmic configurations create important stylistic textures, they are static and remain unchanged for a long time, frequently superimposed by foreground rhythmic reiteration.²⁷ Adams utilizes the foreground rhythm reiteration as a melody, combining the background rhythmic configurations with slower-moving harmonies over a longer time span.

Moreover, the rhythm elements of *Harmonielehre* have more than foreground rhythmic reiteration and background rhythmic configurations. The rhythmic patterns (including the time signatures) in the first movement of *Harmonielehre* are continually changing, and the heavy driving motor rhythms, which start from the very beginning, continue for a long time. It is not until the last part of section A that the tempo relaxes into an episode of slower music, followed by a smooth transition to section B by the arrival of a lyrical melody line, which Adams describes as “a long, roaming “Sehnsucht,” arrives.²⁸ Section C is a synthesis section, combining the long lyrical lines of the middle section with a dynamic continuous opening section.

To demonstrate Adams’ use of the different rhythmic elements in *Harmonielehre*, below are a few examples of such:

²⁷ Greenough, “Progressive Density in John Adams’ *Harmonielehre*: A Systematic Analytic Approach with Original Composition” (DA diss., University of Northern Colorado, 2005), 30-36.

²⁸ Adams, “*Harmonielehre*,” The John Adams Official Website, accessed February 16, 2019, <https://www.earbox.com/harmonielehre/>.

Table 3.2. Foreground Rhythmic Reiteration

Rhythmic Configurations	Measure Numbers	Track Time	Instrumentation
Accelerating motion Mixed meters	mm. 1–16	0:00-0:31	Trumpets
Decelerating motion Mixed meters	mm. 19–58	0:30-1:14	Oboes, Flutes
Composite Mixed meters	mm. 121–146	2:45-3:27	Flutes, Piccolo, Harps, Oboes, Piano

Table 3.3. Background Rhythmic Configurations

Rhythmic Configuration	Measure Numbers	Track Time	Instrumentation
Complementary configuration reiteration	mm. 1–15	0:00-0:29	Flutes
Overlapping configurations	mm. 165–175	3:50-4:22	Flutes, Piccolo, Clarinets
Multiple configurations	mm. 323–330	8:16-8:35	Flutes, Clarinets, Bassoons, Violins, Violas

Musical Example 3.1. Adams, *Harmonielehre*, I (mm. 6–14)

The image shows a musical score for four staves. The top two staves are for Horns (Hn.), with parts 1 and 2. The bottom two staves are for Trumpets (Tpt.), with parts 1 and 2. The music is in 2/2 time and features complex rhythmic patterns with accents and dynamic markings like *fff* and *siml*. The score is for measures 6-14 of Adams' *Harmonielehre*, I.

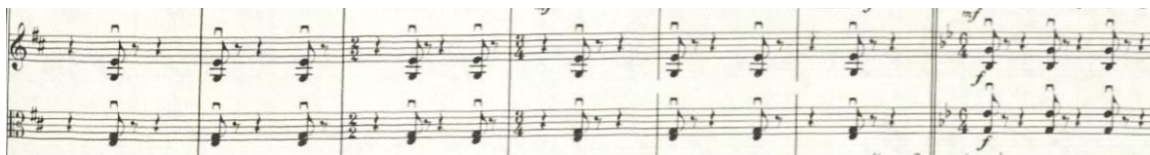
If we examine A section closely, the rhythmic effect here is like an oil tanker moving forward. The shifting rhythmic accents together with the continually changeable time signatures (from 2/2 to 3/4 to 2/2 to 3/4) provide the music a sense of acceleration and deceleration, at different times, while the tempo stays steady (see Ex. 3.1).

As the music continues, the time signatures keep changing between 4/2, 3/4, and 2/2 starting at measure 25. At this point, more accent marks are written in the flutes' and oboes' parts, doubled by the first violin. The horns and basses here are holding long sustained notes while the four clarinets and marimba play the continuous eighth note. At the same time, both harps and violins two, as well as doubles with violas, carry out a polyrhythm of three against two, which is also different from the flute/oboe/violin one rhythm on the top. Fusing together all these different rhythmic patterns, the music now sounds like the tanker is building up its strength for a sprint (see Ex. 3.2).

Musical Example 3.2. Adams, *Harmonielehre*, I (mm. 25–30).

The image displays a page of a musical score for Musical Example 3.2, Adams, *Harmonielehre*, I (mm. 25–30). The score is written for a large ensemble and includes the following parts: Flute (Fl.), Oboe (Ob.), Clarinets (Cl. 1-4), Horns (Horn 1, Horn 2), Harp (Hrp. 1,2), Marimba (Mar.), Violins (Vln. 1, 2), and Viola (Vla.). The score begins at measure 25 and shows complex rhythmic patterns, including polyrhythms and sustained notes. The time signature changes from 4/2 to 3/4 to 2/2. There are dynamic markings like 'pp' and 'cresc.' and performance instructions like '(pizz.)' and '(cresc. in Vln. 1 only)'. The music is written in a key signature of two sharps (F# and C#).

Musical Example 3.3. Adams, *Harmonielehre*, I (mm. 53–59)



Most notably, starting from m. 51 in example 3.3, Adams adds syncopations to add momentum to the music accompanied by a sense of tension and power. Throughout the piece, the hyper duration (rhythm) changes through a designed acceleration from half note to dotted quarter to quarter note. After all three durations, the music then returns back to the half note duration, which started the process (Fig. 3.1).

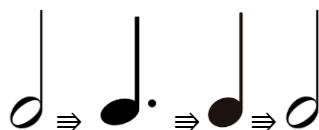


Figure 3.1. Hyper Rhythmic Changing Process

- 3.2.2 Gates

Adams' use of gates is also crucial to the analysis of *Harmonielehre* as a post-minimalist symphony. According to Adams' official website, "the term 'gates' is borrowed from the electronic terminology and refers to the moments when the modes abruptly and without warning shift. Adams clarifies that in his music, there are 'mode[s]', but no 'modulation,'" ²⁹ even though the modulation is everywhere in any typical classical sonata form governed by classical tonality. Gates can be further defined as abrupt changes in static motion, changes in texture, tonality, harmony, timbre, rhythm, or anything; it turns out that everything is nothing like it was is before the gate turned on. It

²⁹ John Adams, "Phrygian Gates and China Gates," The John Adams Official Website, accessed February 16, 2019, <https://www.earbox.com/phrygian-gates-china-gates/>.

directly contradicts the elegance of a pivot chord modulation that leads to a new key area in a section of a sonata form movement. By using these gates, Adams is able to keep changing modes in short phrases over a short time span without foreshadowing.

We first encounter *Harmonielehre*'s gate in m. 59 (Ex. 3.4), where a shift takes place on E-minor in the context of E Dorian to an E-flat major chord in the context of G Aeolian. E Dorian suddenly moves to G Aeolian, but the G-natural acts as a common tone between the two in order to smooth the abrupt change. To explain further, the harmony, beginning in the E-minor sonority, is now lowered by a half step to E-flat major (E lowered to E-flat and B lowered to B-flat) as a gate while the G-nature serves as a common tone between the two sonorities.

Musical Example 3.4. Adams, *Harmonielehre*, I (mm. 53–59)

The image shows a musical score for Musical Example 3.4, illustrating a key change in measure 59. The score is for a multi-instrument ensemble including Piano, Cello (Cel.), Harp (Hp.), Maracas (Mar.), Glockenspiel (Glock.), and Violin (Vln.). The key signature changes from E minor to E-flat major in measure 59. Large text annotations highlight the 'G common tone' and the chord changes: E-G, Eb-G-Bb, and E-G-B. The score includes various performance markings such as *pizz.*, *arco div.*, *mf*, and *f*.

Table 3.4 lists other uses of gates: using E as the tonal center in the A section, besides moving from E-minor to E-flat major in m. 59, the music moves back from E-flat major back to E-minor in m. 64, in a similar way as to how it did in m. 59. In m. 70, E-minor again moves to E-flat major, and in m. 76, as in m. 64, E-flat major moves back to

E-minor. Similar gates can be found in both B and C sections as well. In m. 370, D-flat minor moves to D-major, and in m. 482, E-flat Major moves to E-minor, as in the A section.

Table 3.4. Gates in Adams, *Harmonielehre*, First movement.

Measures	Mode
59	E-minor \Rightarrow E-flat Major (E Dorian \Rightarrow G aeolian)
64	E-flat Major \Rightarrow E-minor
70	E-minor \Rightarrow E-flat Major
76	E-flat Major \Rightarrow E-minor
370	D-flat minor \Rightarrow D-major
482	E-flat Major \Rightarrow E-minor

Adams is known for “gating,” the process of switching from one mode to another, suddenly changing certain pitches while simultaneously changing other parameters (such as rhythm and texture). Adams had employed gates multiple times before writing this symphony. Gates made their debut in his piano work *Phrygian Gates* (1977–78) (see Table 3.5). As the modes change “in the form of a modulating square wave with one state in the Lydian mode and the other in the Phrygian mode,”³⁰ the duration of the Lydian modes decreases and the Phrygian increases. His encounter with electronic music has inspired Adams in composing concert music, and his use of synthesizers, according to Adams, has led to a “diatonic conversion.” As music critic Thomas May reports,

When he first went to California, Adams was deeply involved with the work of John Cage and some of the younger figures of the then avant-garde, Robert Ashley, Alvin Lucier, and Christian Wolff. During a three-year immersion with electronic music he built his own synthesizer. Paradoxically it was that immersion

³⁰ Adams, “Phrygian Gates and China Gates,” The John Adams Official Website, accessed February 16, 2019, <https://www.earbox.com/phrygian-gates-china-gates/>.

and his involvement with technical points of tuning that led to what he called his “diatonic conversion.”³¹

Table 3.5. Adams, *Phrygian Gates*, First Movement.

Sections	Measures	Key
A	1–113	A Lydian (E-major)
B	114–136	A Phrygian (F-major)
C	137–235	E Lydian (B-major)
D	236–265	E Phrygian (C-major)
E	266–333	B Lydian (F-sharp major)
F	334–401	B Phrygian (G-major)

In another of his works, *Short Ride in a Fast Machine* (two fanfares for orchestra 1986), Adams also employed gates effectively. As shown in example 3.5 below, the initial notes of D, E, and A in the brass and synthesizer parts in m. 51 slowly transform by adding additional notes gradually to some of the string and woodwind parts. In m. 52 (Ex. 3.6), the gate occurs, with the harmony suddenly changing from E-major to B-flat major, but the original D, A, and E continue.

³¹ Thomas May, *The John Adams Reader: Essential Writings on an American Composer* (New Jersey: Amadeus Press, 2006), 9.

Musical Example 3.5. Adams, *Short Ride in a Fast Machine* (mm. 49–51)

This musical score page contains the following parts and staves:

- Fl. Picc. 1 & 2:** Flute and Piccolo parts, measures 49-51.
- Ob. 1 & 2:** Oboe parts, measures 49-51.
- Cl. in A 1 & 2:** Clarinet in A parts, measures 49-51.
- Hrn. in F 1 & 2:** Horn in F parts, measures 49-51.
- Tpts. in C 1, 2, 3 & 4:** Trumpet in C parts, measures 49-51.
- Tbns. 1 & 2:** Trombone parts, measures 49-51.
- Perc. 1:** Percussion 1, measures 49-51.
- Perc. 2:** Percussion 2, measures 49-51. Includes markings: (Cristallo), (Glass Cym.), and (Wet Hoopstich).
- Perc. 3:** Percussion 3, measures 49-51.
- Synth. 1 & 2:** Synthesizer parts, measures 49-51.

The score is written in 3/4 time and features complex rhythmic patterns, including sixteenth and thirty-second notes, and rests. The percussion parts include specific effects like glass cymbals and wet hoopstich.

Musical Example 3.6. Adams, *Short Ride in a Fast Machine* (mm. 52–53)

The process shown above provides a concept for changing the tonal center, which Adams describes as “bring[ing] in a new key area almost on the sly, stretching the ambiguity out over such a length of time that the listener would hardly notice that a

change had taken place.”³²

In addition to the gate terminology, the field of Neo-Riemannian Theory (NRT) can also be used to explain these harmonic vacillations. A theory that began to be developed in the late 1980s and early 1990s, its emergence furnishes more tools for the study of contemporary music. NRT succeeds in attracting theorists to explain the transition of chromatic harmony by transformations, and the shocking change in mode by semitonal shifts carries some of the expressive force of Adams’s music. The specific application of this theory process will be illustrated in the following chapter, on Glass’s work.

As one of the Lewinian transformations, the SLIDE transformation (avoiding confusion with the subdominant transformation) describes two diatonic triads exchanged by sharing a third.³³ (In moving from G-major to G-sharp minor, the two outer notes of the triad move a half step up, but the B stays the same). In the case of gates, it is simply a triad going from one to another by sharing a common third through the SLIDE transformation. A case in point, m. 58 is an E-minor, its root moves down by a semitone to E-flat, and its fifth moves down by a semitone to B-flat to build an E-flat major triad. The same transformation applies to other gates as well. In m. 63 to m. 64, E-flat major changes to E-minor by sharing a common tone, and the other two notes move up by a semitone to E and B, respectively.

³² Brent Heisinger, “American Minimalism in the 1980s,” *American Music* 7, no. 4 (1989): 434-35.

³³ David Lewin, *Generalized Musical Intervals and Transformations* (Oxford: Oxford University Press, 2007), 178.

- 3.2.3 Pedal Points

Along with gates, Adams uses pedal points to help create his musical landscape. In general in Adams' works, pedals are employed in one of three main ways: 1) to stabilize static harmony 2) to move between gates and 3) to move between large sections. Musical Example 3.7. Adams, *Harmonielehre*, I (1–5)

The image shows a musical score for five instruments: Violin 1, Violin 2, Viola, Cello, and Bass. The score is in 2/4 time. The Violin 1 and 2 parts are marked 'div. pizz.' and 'non III'. The Viola part is marked 'div. pizz.' and 'III'. The Cello and Bass parts are marked 'III'. The score shows a long-sustained note E in the basses and cellos, and a long-sustained note E in the violins and viola. The score is in 2/4 time and features dynamic markings like 'div. pizz.' and 'non III'.

As shown in example 3.7, starting from the very beginning, Adams gives the long-sustained note E to the basses, cellos, and the second tuba. This note is held until m. 21 when the texture thins out for four measures. Soon after starting in m. 25, the horns now hold the third and fifth of an E-major chord, and the basses join the succeeding measure holding again the low E. Pedal points are commonly used by Adams within static harmonies to establish the key (or tonal center); however, Adams' use of pedal point is different from its function in classical tonal music, when the technique is used to create anticipation for moving to a new key. Other than establishing tonal centers, Adams also writes pedal points when implementing gates. To illustrate, he sometimes utilizes a pedal point to continue a certain line, which buffers the change of the two modes, connecting both the "pre" and "post-gate" harmonies (see example 3.8, where the note middle G (G4) sounds at the point of the gate).

Musical Example 3.8. Adams, *Harmonielehre*, I (mm. 67–70)

The image shows a musical score for measures 67-70. The instruments listed are Flute (Fl.), Piccolo (Picc.), Oboe (Ob.), and strings (1 and 2). The Flute part starts with a grace note (8) and a fermata. The Piccolo part has a melodic line with a fermata. The Oboe part has a series of chords. The strings play a rhythmic pattern. The score is in 3/4 time and has a key signature of one sharp (F#).

A pedal point is used as the connective tissue between two sections, whether it is between the larger A, B, or C sections, or between smaller sections (see example 3.9). As seen in the example, m. 258 is the last measure of section A, and m. 259 is the first measure of section B. By holding the same chord through the two sections, the pedal point thus connects the two sections as if they were working in tandem with a gate.

Musical Example 3.9. Adams, *Harmonielehre*, I (mm. 257–260)

The image shows a musical score for measures 257-260. The instruments listed are Horns (Hn.), Trumpets (Tpt.), Trombones (Tbn.), and Tuba. The score is in 3/4 time and has a key signature of one flat (Bb). The Horns and Trombones play a melodic line with a fermata. The Trumpets and Tuba play a series of chords. The score is divided into Section A and Section B. The dynamics are marked *mp* and *p*.

Besides his own ways of using pedal points, as a composer coming from the classical tradition, Adams also uses pedal points in the same way composers might do traditionally — to prepare an ending progression toward a grand or sectional cadence (see Ex. 3.10). Lastly, repeated pedal notes are also used when approaching a cadence to

highlight and when heralding a significant structural point, adding to its dramatic effect.

Musical Example 3.10. Adams, *Harmonielehre*, I (mm. 588–595)

The image shows a page of a musical score for John Adams' *Harmonielehre*, I, measures 588-595. The score is a full orchestral score with multiple staves for woodwinds, brass, percussion, piano, strings, and double bass. The music is characterized by dense, sustained chords (pedal points) in the lower registers, often marked with fortissimo (ff) dynamics. The percussion section includes timpani, snare drum, and cymbals, with specific instructions like "Damp immediately". The string section features sustained, moving lines, often marked with "arco" and "ff".

In a sense, Adams's use of pedal points, as described above, is a way of transforming a device often used in classical symphonies to fit a new symphonic style infused with minimalism. But it is also important to illustrate how Adams absorbs

traditional music practices such as tonal melodies and closely combines them with minimalist compositional techniques. The elements in *Harmonielehre*, as what has been discussed before, can easily be connected to romanticism, for example, in section B. Conductor Richard E. Wyman also mentioned this point of view in his doctoral dissertation when he mentioned “a seemingly neo-Romantic mid-section containing dramatic solo opportunities, and a final section which combines the two approaches.”³⁴ While the movement’s three sections sound minimalist, each section is texturally different. In section A from mm. 12–159, minimalist techniques are obvious: consonant harmony, repetition, and motor rhythms dominate. In contrast, section B is a combination of romantic elements and minimal techniques, and one might make an analogy to the idea of a lyrical second theme in a traditional sonata form piece (in addition to the idea of a contrasting development section in a sonata form). Here, Adams manages romantic components sparsely within a minimalist context.

- 3.2.4 Dovetailing Structure

In the technique of connecting the two passages, other than working with gates, another technique is dovetailing, an entirely different concept from the concept of the gate. Through dovetailing, the connections between the two sections are smoother and milder. In this work, Adams puts it into use in the transition into the B section and the transition from the B to the C section.

³⁴ Richard E. Wyman, “A Wind Ensemble Transcription of Part 1 (the First Movement) of *Harmonielehre* by John Adams with Commentary” (PhD diss., University of Connecticut, 2014), 2.

Daniel Warburton defined dovetailing in minimalism as follows:

A smooth transition between processes can be effected by dovetailing the end of one into the beginning of the next. This features prominently in the music of Reich written in the 1970s (“Six Pianos,” “Music for 18 Musicians,” “Octet”) and is usually achieved by dropping the lower voices of the texture to have them return with new material underneath the upper voices of the old texture.³⁵

He also provides an example aiming for better understanding of the technique (see Fig.

3.2, which is taken from Warburton’s article).³⁶

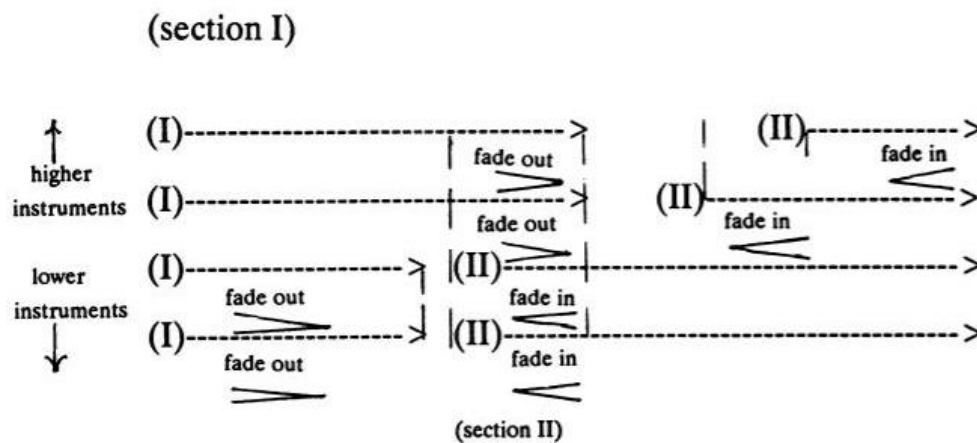


Figure 3.2. Dovetailing Structure

Another scholar, Alexander Sanchez-Behar, has studied the dovetailing structure of Adams, particularly Adams’ instrumental works from the more recent compositional period. Behar states: “Adams uses the formal sections through dovetailing to form a loosely-based three-part formal design driven by various transformations of the onomatopoetic musical motive based from the title of the work.”³⁷ As Behar explains further, “Dovetailing can be realized by temporarily dropping the lower voices of texture

³⁵ Dan Warburton, “A Working Terminology for Minimal Music,” *Intégral* 2 (1988): 156.

³⁶ Reprinted from Warburton, “A Working Terminology,” 159, Example 12.

³⁷ Behar, “Dovetailing in John Adams’ ‘Chain to the Rhythm’,” *Indiana Theory Review* 31, nos. 1-2 (2013): 110-11.

at the end of a formal section. The return of these lower voices signals the beginning of a new link.”³⁸ He also concluded that the technique was not only used by Adams, but also by other minimalist composers: “An examination of Adams’s method for employing dovetailing also serves as a window into the music of other minimalist composers.”³⁹

In the first movement of *Harmonielehre*, multiple uses of the dovetailing technique can be found. As shown in Table 3.6, the first dovetailing structure came in mm. 185–187 (see Ex. 3.11), between the second and third parts of section A.

Table 3.6. Dovetailing Structure in *Harmonielehre*, I.

Measure Numbers	Track Time ⁴⁰
mm. 185–187	4:23-4:26
mm. 257–260	6:13-6:17
mm. 437–438	13:46-13:48

³⁸ Behar, “Dovetailing in John Adams’ ‘Chain to the Rhythm’,” 96.

³⁹ Behar, 111.

⁴⁰ Title: Adams: *Harmonielehre* - Short Ride in a Fast Machine. Conductors: Michael Tilson Thomas, San Francisco Symphony. SFS Media. Catalogue No: SFS0053. UPC: 821936005323. 2012.

Musical Example 3.11. Adams, *Harmonielehre*, I (mm. 184–187)

As the flutes, oboes, and clarinets stop the ascending gesture in m. 185, the bass clarinet continues playing the F-major arpeggios from the previous section. At the same time, horns playing the sustained E-flat major-major-seventh chord, and the entire string section, continuing the E-flat major scale, all carry through the two sections. In m. 187, a new texture enters with the sustained E-flat major-major-seventh sustained chord that comes in through the woodwind and the timpani. During this dovetailing transition, the

woodwinds group, bassoon, timpani, and cello in m. 185 fade out, then fade back in at m. 187 with a new melody.

Musical Example 3.12. Adams, *Harmonielehre*, I (mm. 257–260)

The image displays a page of a musical score for the first movement of John Adams' *Harmonielehre*, specifically measures 257 through 260. The score is arranged in a standard orchestral format with multiple staves for each instrument family. The woodwind section (Flutes, Piccolos, Clarinets) and string section (Violins, Viola, Violoncello, Bass) are prominent. The score illustrates a dovetailing structure where the woodwinds and strings fade out and then fade back in with new material. Key annotations include 'change to FL' for Piccolo and Clarinet parts, 'All Vln. 1: Mutes off' and 'All Vln. 2: Mutes off' for the Violin parts, and 'Solo' for the Cello part in measure 260. Dynamics include mp, p, and mf.

The second dovetailing structure came in mm. 257–260 (see Ex. 3.12) in between the end part of section A and beginning of section B. The piccolos, violins, violas and

basses fade out in mm. 257–259, while the rest continues their ostinato: flutes arpeggiating in the E-flat-minor triad in eighth notes, clarinets arpeggiating an A-flat-major-minor seventh chord (missing the fifth) also in eighth notes, and harps and celesta arpeggiating a G-flat augmented chord in eighth notes and quarter note triplets. The brass section holds a polychord of E-flat minor and D-flat major, connecting the two sections from mm. 257 to 260, and violas play the pedal point as well but stop in m. 259. Then the cellos emerge with a new melody in m. 258.

The third dovetailing structure emerges in mm. 437–438 (Ex. 3.13), which is between the end of section B and the beginning of section C (Ex. 3.14). All the woodwinds besides the two clarinets and three bassoons have faded out by m. 437, together with the entire brass, keyboards, percussion, and lower strings sections. The remaining instruments continue the previous arpeggio formation of the G-minor triad and E-flat major triad (forming the extended chord of E-flat–G–B-flat–D–[F]–A–C–E). This texture is continued into the next section when the other layers of the E-flat-major sustained chord come in m. 438. In particular, bassoons appear in m. 437 with a pedal point to connect two sections. Then all voices return with a steady rhythm in m. 438.

- 3.2.5 Homophony

Another post-minimalist phenomenon is the textural homophony in section B, in contrast with the static instrumentation of classic minimalism. Adams uses homophony to contrast with the static instrumentation of the more minimalist A and C sections. In Section B, there is a succession of solo alternations (see Table 3.7).

Table 3.7. Instrumental Solos in Adams, *Harmonielehre*, First movement, Section B

Starting Measure	Solo Instruments
258	Cellos
313	Horns
334	Flutes
373	Horns and Clarinets
385	Cellos
397	Violins
413	Celesta

A cello solo melody, doubled with the first horn, enters in m. 258 (6:20). The melody is accompanied by a counter melody in the basses and ongoing ostinatos in the woodwinds, harp, and celesta. The brass section holds a polychord, starting from the previous phrase, suggesting both the keys of E-flat and D-flat major. Then the solo melody passes to the higher strings that double the cello melody. This melody sounds romantically lyrical in style with complementary configurations in the accompaniment. The accompaniment, though, is static and uses ostinatos that cycle at different speeds. The cello solo begins in A-flat major and also touches on elements of A-flat Mixolydian. The complementary orchestrational configurations involve flutes, piccolo, harp and celesta, and clarinets, arpeggiating different triads in E-flat minor, G-flat augmented, and A-flat-major-minor seventh (missing a fifth). In section C, from m. 438 to the end, the music slowly morphs back to a minimalist style.

In his autobiography, *Hallelujah Junction*, Adams wrote that

[*Harmonielehre*] was a piece serious in its expressiveness, and the explosive energies and bright colors that inhabit its three movements do not strike me as anything other than the product of that particular time and place. If the work is a parody, it is a parody made lovingly and entirely without irony.⁴¹

In an interview with the New York Philharmonic, he explained,

My own *Harmonielehre* is a parody of a different sort in that it bears a “subsidiary relation” to a model (in this case a number of signal works from the turn of the [20th] century like *Gurrelieder* and the Sibelius Fourth Symphony), but it does so without the intent to ridicule. It is a large, three movement work for orchestra that marries the developmental techniques of minimalism with the harmonic and expressive world of fin de siècle late Romanticism. It was a conceit that could only be attempted once.⁴²

In this piece, as I have discussed, Adams blended the classical form of a symphony with its tonal language and pedal points, the late nineteenth-century romanticism with its lyricism, and the late twentieth-century minimalism with its rhythms and timbre. Adams focuses more on the returning of the tonal center (beginning with E-minor and E-flat major, and ending with the same two keys), suggesting a sense of arriving home. It is consistent with the traditional recap return to the tonic key. The composer has stated three criteria for what constitutes a minimalist piece: regular, articulated pulse, the use of tonal harmony with slow harmonic rhythm, and the building of large structures through repetition of small cells.⁴³ His musical language is a continuous pulsation of single chords, delicately moving through the omnifarious

⁴¹ Adams, *Hallelujah Junction: Composing an American Life*, 131.

⁴² Adams, “*Harmonielehre*,” The John Adams Official Website, accessed February 16, 2019, <https://www.earbox.com/harmonielehre/>.

⁴³ Christoph Cox and Daniel Warner, *Audio Culture: Readings in Modern Music* (New York: Continuum, 2004), 300.

additions and subtractions of the instrumentations in different contexts, with changing tonal colors and rhythms.

CHAPTER FOUR

PHILIP GLASS — Symphony No. 1 (“Low”)

4.1 Theoretical Framework

The second piece I will explore is Symphony No. 1 (“Low”) by American composer Philip Glass. Inspired by the album *Low* from 1977 (written by David Bowie and Brian Eno), Symphony No. 1 (“Low”) engages directly with rock music.⁴⁴ As a composer of twelve symphonies and numerous theater works, Glass is recognized as one of the most prominent composers of the late twentieth century. Among his most iconic compositions are *Glassworks* (1982) and *Einstein on the Beach* (1975-1976). His symphony was composed in 1992 and had its premiere on August 30 that same year.⁴⁵ In describing his inspiration for the symphony, Glass writes, “I’ve taken themes from three of the instrumentals on the record and, combining them with material of my own, have used them as a basis of three movements of the Symphony.”⁴⁶

As one of the significant representatives of minimalism, Philip Glass revealed his upbringing in his own memoir in 2016.⁴⁷ He was born on January 31, 1937 in Baltimore, Maryland. His father owned a record store and his mother was a librarian.⁴⁸ His father instilled in Glass a sense of appreciation for music from childhood, as many of those on

⁴⁴ Philip Glass, “Symphony Low,” The Philip Glass Official Website, accessed Apr 30, 2019, https://philipglass.com/compositions/symphony_1_low/.

⁴⁵ Booklet notes by Philip Glass to the album *Low Symphony*, Point Music, 1993.

⁴⁶ Ibid.

⁴⁷ Philip Glass, *Words Without Music: A Memoir* (New York: Liveright Publishing Company, 2015), 1-20.

⁴⁸ Philip Glass, *Words Without Music: A Memoir*, 306.

the paternal side of his family were musicians, such as his cousin Cevia who was a classical pianist. His father often collected new records, and Glass frequently listened to them, which greatly influenced Glass' compositional voice. Glass discusses this in his book, *Words Without Music*: "My father was self-taught, but he ended up having a very refined and rich knowledge of classical, chamber, and contemporary music. Typically, he would come home and have dinner, and then sit in his armchair and listen to music until almost midnight. I caught on to this very early, and I would go and listen with him."⁴⁹ As a consequence, Glass was familiarized with modern classical music like Stravinsky (at times), Copland, Bartók, Hindemith, Schoenberg, Shostakovich, and music such as the Op. 59 string quartets and the Symphony No. 5 of Beethoven, and the string quartets and the Piano Trio No. 1 in B-flat Major, D. 898 of Schubert.⁵⁰ Among them, Schubert's works were particularly influential.⁵¹

Through ages twelve to fifteen, he received flute lessons at Peabody Conservatory, later entering the University of Chicago studying mathematics and philosophy. He then studied keyboard and composition at the Juilliard School of Music, under William Bergsma and Vincent Persichetti, and earned his B.A. in 1959 and M.A. in 1961.⁵² At Juilliard, he was classmates with Steve Reich and Peter Schickele. Later, in the summer of 1960, he attended the Aspen Music Festival, studying under Darius Milhaud.

⁴⁹ Glass, *Words Without Music: A Memoir*, 17-18.

⁵⁰ Thomas May, *The John Adams Reader: Essential Writings on an American Composer* (New Jersey: Amadeus Press, 2006), 13.

⁵¹ Glass, *Words Without Music: A Memoir*, 18.

⁵² Neil Butterworth, *Dictionary of American Classical Composers*, 2nd ed. (New York: Routledge, 2005), 173.

⁵³ Richard Kostelanetz tells of Glass's time in Paris: ⁵⁴ four years later, from 1964 to 1966, Glass studied under Nadia Boulanger and Ravi Shankar. The learning experience studying under Boulanger affected Glass's works throughout his life. She taught Glass a new way of looking at music: not as a way of following rules, but as a way of hearing art and mastering skills. In appreciation of Boulanger's teaching, Glass admitted in 1979 that "The composers I studied with Boulanger are the people I still think about most—Bach and Mozart." ⁵⁵

Joan La Barbara introduced the story of how Shankar and Glass came to know each other: ⁵⁶ While in Paris, Glass was hired by the film director Conrad Rooks to work with Shankar to record music for a film. Here, Glass was to take the original Indian score and translate it into modern Western notation. Working with Shankar enabled Glass to progress in how he worked with rhythm. Glass's works cover almost every genre of classical music, as well as film scores, music theatre, rock, and even pop. Glass, however, describes himself as a composer of "music with repetitive structures" and much of his early style involved the extended repetition of a brief and elegant melody. ⁵⁷ *Music in*

⁵³ Keith Potter, *Four Musical Minimalists: La Monte Young, Terry Riley, Steve Reich, Philip Glass* (Cambridge: Cambridge University Press, 2000), 253.

⁵⁴ Richard Kostelanetz, *Writings on Glass: Essays, Interviews, Criticism* (New York: Schirmer Books, 1997), 104.

⁵⁵ Kostelanetz, *Writings on Glass: Essays, Interviews, Criticism*, 112.

⁵⁶ Joan La Barbara, "Philip Glass and Steve Reich: Two from the Steady State School," in *Writings on Glass: Essays, Interviews, Criticism*, ed. Richard Kostelanetz (New York: Schirmer Books, 1997), 40-41.

⁵⁷ "Philip Glass Biography," The Philip Glass Official Website, accessed Apr 30, 2019, <https://philipglass.com/biography/>.

Fifths and *Music in Contrary Motion* showcased Glass's musical language in these early works by featuring simple harmony, rhythmic subtlety, and compact textures.

Between 1977 and 1979, English singer and songwriter David Bowie collaborated with producer Brian Eno on the "Berlin Trilogy," which included *Low*, *Heroes*, and *Lodger*.⁵⁸ In 1992, Glass wrote his first symphony, Symphony No. 1 "Low" (after the album).⁵⁹ As Glass's first symphony, it was initially met with mixed critical reviews and has been since its debut, but Bowie himself stated his approval. Glass notes,

My approach was to treat the themes very much as if they were my own and allow their transformations to follow my own compositional bent when possible. In practice, however, Bowie and Eno's music certainly influenced how I worked, leading me to sometimes surprising musical conclusions. In the end I think I arrived at something of a real collaboration between my music and theirs.⁶⁰

Glass recalled that of the *Heroes* and *Low* symphonies, Bowie preferred Symphony No. 4 (Heroes Symphony) as he believed it was more original, while Glass held the opposite view.⁶¹ Glass described the story behind Symphony No. 1 ("Low") on his official website:

The "Low" Symphony, composed in the spring of 1992, is based on the record "Low" by David Bowie and Brian Eno first released in 1977. The record consisted of a number of songs and instrumentals and used techniques which were similar to procedures used by composers working in new and experimental music. As such, this record was widely appreciated by musicians working both in the field of "pop" music and in experimental music and was a landmark work of that period. I've taken themes from three of the instrumentals on the record and, combining them with material of my own, have used them as a basis of three

⁵⁸ Christopher Sandford, *Bowie: Loving the Alien* (London: Little, Brown and Co., 1996), 149.

⁵⁹ Booklet notes by Philip Glass to the album *Low* Symphony, Point Music, 1993

⁶⁰ Philip Glass, "Symphony Low," The Philip Glass Official Website, accessed Apr 30, 2019, https://philipglass.com/compositions/symphony_1_low/.

⁶¹ Philip Glass, "Philip Glass on David Bowie: 'He was a master unto himself,'" accessed July 30, 2019, <https://www.theguardian.com/music/2016/jun/25/philip-glass-on-david-bowie-he-was-a-master-unto-himself>.

movements of the Symphony. Movement one comes from “Subterraneans”, movement two from “Some Are”, and movement three from “Warszawa”.⁶²

For fans of the original album, Glass’s interpretations of Bowie and Eno are captivating. For other music enthusiasts, it is a new fusion of rock materials and orchestral music: Glass combines rock music through a minimalist lens and on a symphonic canvas, a hybrid of the three elements. Primarily, he abandoned the album’s rock style, adapting the songs into a purely orchestral form. He also adapted Bowie’s and Eno’s music to the harmonic patterns of minimalist language.

Using the thematic material from the album as a starting point, Glass produces three movements that correspond to the outline of the symphony. The symphony has three movements lasting an entire duration like *Harmonielehre*, of around 40 minutes. The beginning of the first movement, “Subterraneans,” recalls the tension of the original song’s opening. Indeed, the opening of the symphony directly reproduces the first few minutes of “Subterraneans” from the *Low* album, unfolding in an atmosphere of mystery as the music builds up, increasing the energy of the rhythm, until the movement’s dramatic (yet anticlimactic) end.

⁶² Glass, “Symphony Low,” The Philip Glass Official Website, accessed Apr 30, 2019, https://philipglass.com/compositions/symphony_1_low/.

Table 4.1. The Form of Glass, Symphony No. 1 (“Low”), First movement

Sections	Rehearsal Numbers ⁶³	Track Time ⁶⁴	New Tempo
A	1–29	0:00-7:19	84
	Music calm strain. Reh. 28–29 (bridge/transition): abrupt changes, <i>Crescendo</i> .		
B	30–72	7:20-13:56	136
	1. Motor rhythm. 2. Multiple time signature changes		
C	73–81	13:57-15:07	156
	Tempo increase		<i>piu mosso</i>

As seen in Table 4.1, the opening movement of Glass’s Symphony No. 1 displays a similar three-part division. The beginning section A remains calm (reh. 1–29), but at the end of the A section (reh. 28–29) there is a sudden transition with a crescendo leading into the B section. The B section (reh. 30–72) features motor rhythms, multiple time signature changes, and a tempo increase from 84 bpm up to 136 bpm. The last section C (reh. 73–81) is a short section with the tempo increasing to 156 bpm.

4.2 Prominent Features

- 4.2.1 Additive Process

Glass narrates the story of how he became attached to additive process and rhythmic cycles in the book *Music by Philip Glass*. When he transcribed music from the original Indian transcription, he admits he did not know where to place the bar lines in the music as it is generally done in Western music. Attempting to avoid unwanted accents, he then listened to his teacher Shankar say that “All the notes are equal!”

⁶³ Glass uses rehearsal numbers instead of measure numbers.

⁶⁴ Conductors: Dennis Russell Davies, The Brooklyn Philharmonic Orchestra. Orange Mountain. Catalogue No: OMM0095. UPC: 801837009521. 2014.

Accordingly, Glass tried to abandon the stereotype Western-style algorithm of how to divide the music. He removed the bar lines, and his eyes shine at the moment when he saw a steady chain of rhythmic pulses. Glass said: “In Western music we divide time as if you were to take a length of time and slice it the way you slice a loaf of bread. In Indian music (and all the non-Western music with which I’m familiar), you take small units, or “beats,” and string them together to make up larger time values.”⁶⁵

The idea of “additive” techniques originated from Indian music (*tāla*, in rhythmic cycle).⁶⁶ Glass explains on his official website that the principle is to repeat a basic unit several times, but add additional notes to the unit one at a time, then repeat and add again, then another, and so on. The subtractive process is related to the additive process, which uses the same principles as the additive process but subtracts the notes from the original group. This method builds up together smaller units of rhythm to produce larger units or groups. This technique is associated with Glass, and additive techniques are generally considered to be the most prominent feature of Glass’s style. “A simple figure can expand and then contract in many different ways, maintaining the same general melodic configuration but, because of the addition or subtraction of one note, it takes on a very different rhythmic shape,” Glass explained.⁶⁷

The additive rhythm process is his leading brand, a recognizable trait that is not easy to find among his generation of composers. The succeeding unit is based on the

⁶⁵ Glass and Jones, *Music by Philip Glass* (New York: Harper & Row, 1987), 17-18.

⁶⁶ Lewis Rowell, *Music and Musical Thought in Early India* (Chicago: University of Chicago Press, 2015), 12-13.

⁶⁷ Philip Glass, “Einstein on the Beach,” The Philip Glass Official Website, accessed Apr 30, 2019, https://philipglass.com/recordings/einstein_on_the_beach_none/

former unit adding or subtracting notes and continuing this technique throughout the whole piece. His work for any combination of instruments, *Music in Fifths* (1969), like many of Glass's works, clearly illustrates this, with each line of music representing a variation on the pattern shown in the first line (the following excerpt only shows a fraction of the long process).

Musical Example 4.1. Glass, *Music in Fifths* (reh. 1–10)

The first movement of *Symphony No. 1* (“Low”) exhibits a similar process as it plays out in the violin parts (see example below).

Musical Example 4.2. Glass, *Symphony No. 1* (“Low”), I (reh. 45)

I have divided musical example 4.2 into four parts marked by dotted red lines. Assuming the first segment marked as “1” presents a basic idea, the second repeats the first and adds four notes in violin one and four notes in violin two. The third segment is the basic idea again, then the fourth not only repeats the third segment, but it also repeats the second segment, and adds more notes and continues. This is a representative example of the additive process, cycling while adding new notes each time; thus, the basic pattern is lengthened by adding additional notes to become a new pattern.

Another example occurs later in the music with the castanets and snare drum performing the additive rhythm process in reh. 58 (see example below).

Musical Example 4.3. Glass, Symphony No. 1 (“Low”), I (reh. 58)

The image shows a musical score for two parts: Castanets and Perc. Sn. Dr. The score is divided into four segments by dotted red lines, labeled 1, 2, 3, and 4. The first segment (1) shows a basic rhythmic pattern. The second segment (2) repeats the first two beats and adds a new rhythmic element. The third segment (3) repeats the first three beats of the second segment. The fourth segment (4) repeats the first two beats of the first segment and adds more notes.

The four parts are separated by dotted red lines. Assuming the first segment is the basic pattern, the second copies the first two beats of the basic pattern and turns the third beat of the basic pattern (two sixteenth notes and an eighth note) into four eighth-notes. The first three beats of the third segment are exactly the same as the second segment, and the first two beats of the last segment are exactly the same as the basic pattern.

- 4.2.2 Rhythmic Cycles

Traditional Western music divides beats (simple meters, compound meters, etc.), while some traditional Eastern music uses the additive process repeating a rhythm many times. As part of a new rhythm is added to the original rhythm cell, a new rhythmic pattern is formed. Glass explains that Indian music is structured by a large rhythmic cycle

(called *Tāla*), a metric organization of melody. It has an absence of downbeat and upbeat: all the notes are equal, and the music is divided by the length of the notes. The framework of Indian music is the rhythm. The interaction of melodic invention, or improvisation, with the rhythmic cycle (the *Tāla*) provides the tension in Indian music, as melody and harmony (rhythm is the poor relation here) provides it in Western music.

⁶⁸Indian music splices small units of rhythm and pieces them together into a larger section, then repeats the process.

Philip Glass frequently uses the additive process and cyclic structure in his work. To demonstrate, I will discuss briefly Glass's most well-known work, the opera *Einstein on the Beach*, which also incorporates the principles of the additive and cyclic processes that he learned from Shankar. In *Einstein on the Beach*, he uses additive techniques to create a large-scale rhythmic loop that comprises small loops in it; each chord is gradually lengthened by increasing the number of subdivisions given to each chord. Example 4.4 shows the opening of *Einstein on the Beach* to illustrate a basic explanation of the additive process.

⁶⁸ Philip Glass and Robert T. Jones, *Music by Philip Glass* (New York: Harper & Row, 1987), 18.

Musical Example 4.4. Glass, *Einstein on the Beach*, Knee I (reh. 1–3)

The musical score for "Knee I" is presented in three sections, labeled 1, 2, and 3. Each section features a Chorus (Soprano, Alto, Tenor, Bass) and an Organ. The Chorus part consists of a rhythmic pattern of quarter notes, with the length of the pattern increasing from 4 to 6 to 8 quarter notes across the sections. The Organ part provides a steady accompaniment. The score is written on a grand staff with a treble clef for the Chorus and a bass clef for the Organ.

The main idea consists of a four quarter-notes-long measure in the chorus part, the succeeding measure grows to six, then eight quarter-notes in length. Then the following sentences repeat the first sentence with various minor changes (for instance, the first beat of the third measure in the second sentence, a quarter rest, is now moved to the first beat of the second measure in the third sentence).

This cycling process involves playing two different lengths of rhythms at the same time; when the two rhythms return to the starting point in unison, the cycle ends. *Einstein on the Beach*: Act I, Scene 1 – Train demonstrates this rhythmic cycle. This scene has two lines at the same time: one in the chorus, another in the instruments. The music starts by establishing a basic rhythm pattern from the very beginning to 0:04⁶⁹. In the Train sequence, two lines are looped at the same time. One is the chorus singing the solfège syllable, while the instruments loop behind it. In 0:05, the chorus introduces a

⁶⁹ Conductor: Michael Riesman, The Philip Glass Ensemble. Recorded and mixed at Big Apple Recording Studios, New York, N.Y. Tomato Music Company. TOM-4-29011979.

new rhythm line at different lengths. In the train scene, these two rhythms are repeated, sometimes in contrast, sometimes in unison. This is a representative example of how Glass handles the cycle structure. However, at 7:33 the circle is stopped by another repeated women's chorus melody, and from 7:35 the chorus begins a rhythmic cycle. Following that, at 8:50, the music returns to the very beginning of the cyclic structure and rhythmic lines. At 16:00, it goes back again to the chorus cyclic line, and finally, the chorus completes at the end. This signifies that the train scene is divided into four parts: the basic rhythm cycle, the chorus cycle, then back to the basic rhythm cycle, and finally, the chorus cycle, which ends the whole song.

Musical Example 4.5. Glass, *Einstein on the Beach*: Act I, Scene 1 – Train, (reh. 1–5)

TRAIN

The musical score for the 'TRAIN' scene is presented in two systems. The first system includes the Piccolo, Soprano Saxophone, Tenor Saxophone, Soprano, Alto, Organ 1, and Organ 2. The second system includes the Piccolo, Soprano Saxophone, Tenor Saxophone, Soprano, Alto, Organ 1, and Organ 2. The score features rhythmic cycles indicated by 'x16', 'x3', 'x4', and 'x8' above various instruments. The vocal parts (Soprano and Alto) have lyrics: 'La Si Do Si', 'La Fa La Si Do Si', 'Mi Fa La Fa', and 'La Fa La Si Do Si'. The organ parts are marked 'Sempre vivo'. The score concludes with 'D.S. from 3' and a circled '3'.

The opening of the first Train scene is a proper example of rhythmic cycles (see Ex. 4.5). In this example, reh. 2, the three repetitions (indicated by X3) of the piccolo, soprano, alto, organ one, and organ two are equal in length to four repetitions (indicated by X4) of the soprano saxophone, tenor saxophone, and the lower part of the organ two.

The same is true for the following rehearsal numbers, as seen in reh. 45. Although each part has different repetition times, their total lengths are all equal. In addition, as shown from the above score, except for the first rehearsal numbers, the rhythm and the notes are repetitive: reh. 2 and 5 are identical, and the last part of reh. 3 and reh. 4 are as well.

The Train scene is an early example of Glass's focus on rhythmic cycles. He used the basic principles of Indian traditional music, combining them with Western norms. Extending the use of rhythmic cycles (repeating fixed rhythmic gestures of specific lengths),⁷⁰ Glass creates extended structures in music by "superimposing two different rhythmic gestures of varying lengths. Depending on the length of each pattern, they will eventually arrive together back at their starting points, making one complete cycle."⁷¹ In a way, it has some similar progression to Steve Reich's phase music — the gestures start together, then gradually separate to produce a double effect, but eventually return to where they started.

The two techniques explained above, additive process and cyclic structure (the basis of early minimal works), are the most commonly used in Glass's works and are both used here extensively in his Symphony No. 1 ("Low"). I will first demonstrate the cyclic structure in the first movement of Symphony No. 1 ("Low") (see three examples below).

⁷⁰ Philip Glass and Robert T. Jones, *Music by Philip Glass*, 59.

⁷¹ Ibid.

Musical Example 4.6. Glass, Symphony No. 1 (“Low”), I (reh. 1)

Musical score for Musical Example 4.6, showing the first rehearsal mark (reh. 1) of the first movement of Glass's Symphony No. 1. The score includes staves for Piccolo, Flute (1 and 2), Oboe (1 and 2), Clarinet in E-flat, and Clarinet in B-flat. The music features a complex, rhythmic pattern with many trills and slurs, marked with 'pp' (pianissimo).

Musical Example 4.7. Glass, Symphony No. 1 (“Low”), I (reh. 2)

Musical score for Musical Example 4.7, showing the second rehearsal mark (reh. 2) of the first movement of Glass's Symphony No. 1. The score includes staves for Flute (1 and 2), Oboe (1 and 2), Clarinet in E-flat, and Clarinet in B-flat. The music continues with the complex, rhythmic pattern, marked with 'pp' (pianissimo).

Musical Example 4.8. Glass, Symphony No. 1 (“Low”), I (reh. 3)

Musical score for Musical Example 4.8, showing the third rehearsal mark (reh. 3) of the first movement of Glass's Symphony No. 1. The score includes staves for Flute (1 and 2), Oboe (1 and 2), Clarinet in E-flat, and Clarinet in B-flat. The music continues with the complex, rhythmic pattern, marked with 'pp' (pianissimo).

The flutes, oboes, and keyboard keep repeating the same type of rhythmic pattern from reh. 1 until 27, but each time repeated with a slight change. The clarinet in E-flat and B-flat echo the flutes, oboes, and keyboard by performing the same materials as well. Four voices all play the trills for doubled fourths, or quartals, in C-sharp–F-sharp, E–A, F-sharp–B. They occasionally play doubled third trills A–C-sharp and B–D. These types

of materials are steadily changeable and repeating from the beginning to reh. 27. It is worth mentioning that the reh. 9 is followed by reh. 1A instead of reh. 10; as the content is completely repeated one more time, reh. 1–9 A are the same as reh. 1–9. Therefore, without a doubt, all materials go through a loop. If the whole movement is a large cycle, the first twenty rehearsal numbers of the movement make a small complete loop. At this point, the repetition of the first nine rehearsal numbers is a similar idea to the traditional sonata as it does repeat the exposition. Examples 4.6-4.8 illustrate that if the first doubled fourth trills C-sharp–F-sharp and E–A are the basic unit, the third measure of the reh. 1, the third to the fourth measures of reh. 2, and the second measure of the reh. 3 are steadily cycling the basic unit. The following rehearsal numbers are akin to a cycle by continuing to vary and recap these musical figures. The additive process integrated with this concept could generate extremely complex rhythms, and the recombination of the rhythms will be prolonged indefinitely.

Besides cyclic structure, additive structures can also be found throughout the first movement of Symphony No. 1 (“Low”) (see four examples below).

Musical Example 4.9. Glass, Symphony No. 1 (“Low”), I (reh. 30)

Musical Example 4.10. Glass, Symphony No. 1 (“Low”), I (reh. 31)

Musical Example 4.11. Glass, Symphony No. 1, (“Low”), I (reh. 32)

Musical Example 4.12. Glass, Symphony No. 1 (“Low”), I (reh. 33)

The above examples, taken from reh. 30–33, give an idea of the combination of the rhythmic cycle and the subtractive process.

This percussion group (tambourine, woodblock, and snare drum), playing in 5/4, stays the same from reh. 30 and 31 (tambourine has a slight change of two eighth notes in reh. 30 to tone quarter note in reh. 31). In reh. 32, Glass first adds in two measures of music in 4/4, which has the same rhythmic pattern as the previous two rehearsal numbers, but here he subtracts the last beat from the original grouping, leaving it with the first four beats. When returning back to 5/4, the pattern also changes—what used to be beat four of the original patterns is now the first beat of the new 5/4 pattern, and the rest are being moved a beat behind. If we number the beats of each pattern, Glass changes from 1-2-3-4-5 to 4-1-2-3-5. Reh. 33 repeats reh. 32 exactly the way reh. 32 is played.

As an explorer of styles, Glass mixed techniques from both Western and Eastern music. He owns his unique sound in *Low* dealing with classical forms and repetitive structures. The highly recognizable Glass style is due to his repetition, predominantly formed by rhythmic and melodic cells and his reliance on traditional diatonic harmonies.

Since the 1980s, Glass's later style retained its repetitive own brand, along with his incorporation of simple repetition into more lyrical melodies and more complex harmonies. These are all present in his first symphony, which reinterprets the original album through a minimalist perspective. His emphasis on giving a sense of drama by incorporating arpeggios, pulsing chords, and scales within changing textures is also evident.

- 4.2.3 Neo-Riemannian Theory

Triadic transformation (also known as contextual inversion) is used by contemporary, especially minimalist, composers such as Philip Glass and John Adams.⁷² In the following section, I will be demonstrating the triadic transformation process through Neo-Riemannian Theory (NRT).

Originated from David Lewin and discussed briefly in Chapter 3, NRT is used to analyze the relationship between succeeding major and minor triads through mathematic group theory. In his article, "Amfortas's Prayer to Titirel and the Role of D in Parsifal" (1984), and his significant book, *Generalized Musical Intervals and Transformations* (1987), Lewin introduced transformational theory. Since then, Brian Hyer, Richard Cohn, and Henry Klumpenhouwer have joined in this discussion. NRT involves diatonic triads (major and minor) and three of their triadic transformations. The central idea is that motion between nearby harmonies can be described by simple transformations.⁷³

⁷² Kyle Gann, "So I'm Neo-Riemannian: Who Knew?" *PostClassic*, March 6, 2009, accessed Apr 30, 2019, <https://www.kylegann.com/PC090306-SoImNeoRiemannian.html>.

⁷³ Cohn, "Introduction to Neo-Riemannian Theory: A Survey and Historical Perspective," *Journal of Music Theory* 42, no. 2 (1998): 167-180.

Lewinian transformational approaches provide an inviting tool for analyzing non-functional chords. As an emerging analytical system, this theory is usually cited when analyzing the chromatic harmony of the late Romantic period. The theory contributes to the understanding of chromatic harmony in the nineteenth century and many techniques in the twentieth century.⁷⁴ It can be flexibly applied to multifarious genres of music. Triadic transformations prove to be particularly useful in dealing with non-functional triadic harmonics. For instance, Timothy Johnson utilizes this theory extensively in analyzing John Adams's *Nixon in China*.⁷⁵ To analyze *Nixon in China*'s pitching process, Johnson relied heavily on the transformations P, L, R, and SLIDE, all of which originated from the work of David Lewin. In analyzing Richard Nixon's "News" aria, Johnson effectively used the transformations (especially the SLIDE) to illustrate the change in Nixon's emotional fluctuations. With each SLIDE transformation, he would point out that it corresponded to Nixon's mood, from extroverted to introverted. As far as the composer is concerned, NRT is particularly applicable to the analysis of the romantic era and minimalist music. This is especially evident in Philip Glass's music, as Rob Haskins has demonstrated in discussing the opera *Einstein on the Beach*. Haskins notes that Glass's harmonic progressions in some parts of *Einstein on the Beach* can be understood "in Neo-Riemannian terms for [their] parsimonious voice leading and traversal of three of the four hexatonic systems. Like the late Romantic music to which Neo-Riemannian theory was initially applied, Glass's harmonic cycle operates in a

⁷⁴ Richard Cohn, "Maximally Smooth Cycles, Hexatonic Systems, and the Analysis of Late-Romantic Triadic Progressions," *Music Analysis* 15, no. 1 (1996): 19-40.

⁷⁵ Timothy Johnson, *John Adams's Nixon in China: Musical Analysis, Historical and Political Perspective* (Burlington, VT: Ashgate, 2011), 94.

manner similar to functional harmony but cannot be wholly explained by the traditional principles of functional harmony.”⁷⁶

Cohn introduced the basic principle in his article. The relationships between triads can be substituted with different pitches in closely related or distantly related ways, classified according to three fundamental parsimonious transformations: parallel (P), relative (R), and *Leittonwechsel*, or leading-tone exchange (L). Major/minor, by moving the third of a triad up/down, is the P function. The R function is easy to recognize because it is different from the other two transformations because of the move of a whole step. Raising the fifth of a major chord turns it into its relative minor chord, and lowering the root of the minor triad produces the relative major. The L function lowers the root of a major triad by a semitone, or raises the fifth of a minor triad a semitone, in either case creating a new triad of the opposite modality.⁷⁷ Functions can be put together to compound transformations, such as LR/RL, LP/PL, LPL, RP, PRL and so on.⁷⁸ The N (or *Nebenverwandt*) transformation changes a major triad to its minor subdominant, and vice versa. Applying R, L and P sequentially yields the N transformation.⁷⁹ The S or SLIDE (avoiding confusion with the S “subdominant” transformation) connection shifts

⁷⁶ Rob Haskins, “Another Look at Philip Glass: Aspects of Harmony and Formal Design in Early Works and Einstein on the Beach,” *Journal of Experimental Music Studies* 12 (2005), 29.

⁷⁷ Cohn, “Introduction to Neo-Riemannian Theory: A Survey and Historical Perspective,” *Journal of Music Theory* 42, no. 2 (1998): 167-180.

⁷⁸ Cohn, “Maximally Smooth Cycles, Hexatonic Systems, and the Analysis of Late-Romantic Triadic Progressions,” 12.

⁷⁹ Cohn, “Weitzmann’s Regions, My Cycles, and Douthett’s Dancing Cubes,” *Music Theory Spectrum* 22, no.1 (2000): 89–103.

two triads by sharing a third and applying L, P, and R sequentially. ⁸⁰ The H transformation (LPL) relates a triad with its hexatonic pole. ⁸¹

Cohn also addresses this in another article and gives a helpful explanation: The L, P, and R modes of chord conversion are branded by maintaining the two common notes and using parsimonious voice leading. Two major/minor chords would be considered parsimonious if they merely share one note by stepwise motion, but the other two identical notes stay the same. This property of stepwise motion guiding a single voice is regarded as voice-leading parsimony. ⁸² A complete RL/LR cycle starts on a triad and returns to it after 24 transformations. LR loops through a whole series of consonant triads. ⁸³ The example below lists the first few transformations in C major (see Fig. 4.1). These chords are all pure triads and evolve from C-major through single note-shifts LR, before eventually returning to C-major:

R L R L R L R

CM am FM dm BbM gm EbM cm

Figure 4.1. The Beginning of the RL/LR Cycle.

⁸⁰ David Lewin, *Generalized Musical Intervals and Transformations* (Oxford: Oxford University Press, 2007), 178.

⁸¹ Cohn, “Uncanny Resemblances: Tonal Signification in the Freudian Age,” *Journal of the American Musicological Society* 57, no. 2 (2004): 285–323.

⁸² Cohn, “Maximally Smooth Cycles, Hexatonic Systems, and the Analysis of Late-Romantic Triadic Progressions,” 12.

⁸³ Cohn, 16.

The cycle starts on a C-major triad, then raises the fifth a tone to A, meanwhile, the other two notes stay put as common tones. The second A-minor triad through an L-transformation as E ascends a semitone to F, the notes C and A are common tones. The F-major triad undergoes an R-transformation as C moves up a tone to D, and the two notes F and A keep still. After the subsequent transformations and so on, eventually, the cycle will return to the original the C-major triad. In NRT, a *Tonnetz* (a German word which means tone-network) (shown below, copied from Cohn's 1998 article ⁸⁴) is a tonal space diagram often used to express the relationships between chords. Engebretsen and Broman state, "The LR cycle, which moves along the horizontals of the *Tonnetz*, differs from the LP and PR cycles in that it progresses through all twenty-four consonant cycles, rather than partitioning them into shorter cycles." ⁸⁵

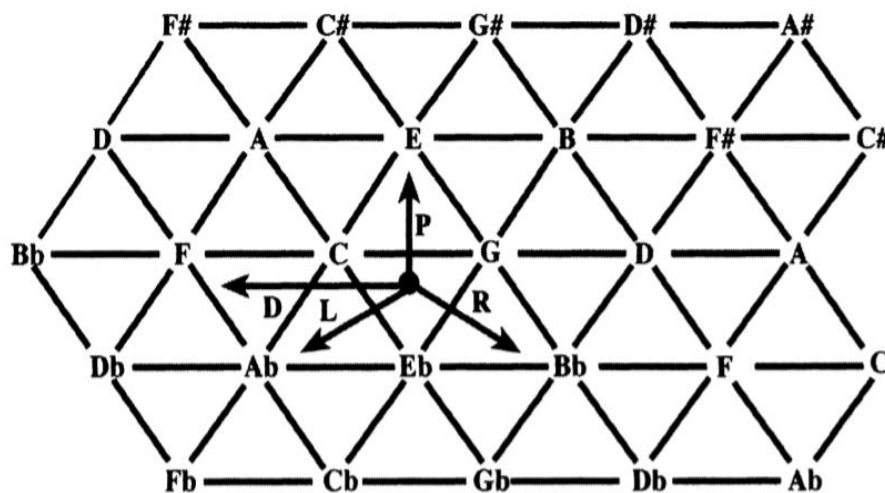


Figure 4.2. The Pitch Name *Tonnetz*.

⁸⁴ Cohn, "Introduction to Neo-Riemannian Theory: A Survey and Historical Perspective," *Journal of Music Theory* 42, no. 2 (1998): 172.

⁸⁵ Nora Engebretsen and Per F. Broman, "Transformational Theory in the Undergraduate Curriculum: A Case for Teaching the Neo-Riemannian Approach," *Journal of Music Theory Pedagogy* 21 (2007): 49.

Correspondingly, the LR cycle also appears in the Symphony No. 1 (“Low”). The cycle starts from the last part of the B section with the composer employing the LR cycle in various voices. The first example appears at rehearsal number 68, seen in the example below.

Musical Example 4.13. Glass, Symphony No. 1 (“Low”), I (reh. 68)

Figure 4.3. Reduction of Glass, Symphony No. 1 (“Low”), I (reh. 68) in Written Pitch

(The pitches above are not in concert pitch; they are C-sharp, E, G-sharp; A, C-sharp, E; and F-sharp, A, C-sharp in the trumpet, and F-sharp, A, C-sharp; D, F-sharp, A; and B, D, F-sharp in the horn). The trumpet begins with a C-sharp-minor triad transformed by the leading-tone exchange and relative transformation to later become an F-sharp-minor triad. The first chord starts on the C-sharp-minor triad to an A-major triad and undergoes an L transformation as G-sharp ascends a semitone to A, while E and C-sharp are common tones. The fifth of the A-major triad then moves up a tone to F-sharp,

resulting in an F-sharp-minor triad. When the LR transformations are performed on the resulting F-sharp-minor, C-sharp-minor results, and this harmony evolves to F-sharp-minor. The same transformations are applied in the horn part, from F-sharp-minor to B-minor by undergoing L and R transformations. The F-sharp-minor triad becomes a D-major triad through an L transformation as C-sharp ascends a semitone to D, while F-sharp and A are common tones. The subsequent D-major triad results in B-minor by an R-transformation as A ascends a tone to B, while F-sharp and D remain common tones. The following two examples track the same approach.

Musical Example 4.14. Glass, Symphony No. 1 (“Low”), I (reh. 70)

Figure 4.4. Reduction of Glass, Symphony No. 1 (“Low”), I (reh. 70) in Written Pitch

Similar to the previous example as described above, the horn evolves from C-sharp minor to F-sharp minor. (Again, here are the concert pitches: C-sharp, E, G-sharp; A, C-sharp, E; and F-sharp, A, C-sharp). When the LR transformations are performed on the resulting F-sharp-minor, C-sharp minor results.

At reh. 76, the trumpets perform several inversions of triads related to Neo-Riemannian transformations (see Ex. 4.15). It is a series of Riemann transformations

changing pitch, all adjusted to pure triads that evolve from E-major to B-minor via single note-shifts of the LR cycle.

Musical Example 4.15. Glass, Symphony No. 1 (“Low”), I (reh. 76)



Figure 4.5. Reduction of Glass, Symphony No. 1 (“Low”), I (reh. 76) in Written Pitch

This example is a longer transformation progression to demonstrate the RL cycle. (The concert pitches are: E, G-sharp, B; C-sharp, E, G-sharp; A, C-sharp, E; F-sharp, A, C-sharp; D, F-sharp, A; B, D, F-sharp). The trumpets start with the E-major triad transformed by the R and L transformation and end in a B-minor triad. The first chord starts on the E-major triad to the C-sharp-minor triad by an R transformation as B ascends a tone to C-sharp. The fifth of the C-sharp-minor triad moves up a semitone to A, resulting in an A-major triad, then the fifth moves up a tone to F-sharp, resulting in an F-sharp-minor triad. The F-sharp-minor triad goes through an L-transformation as C-sharp ascends a semitone to D, and the D-major triad undergoes an R-transformation as A ascends a tone to B. When the RL transformations are performed on the resulting E-major triad, B-minor results. The evolution is from E-major to B-minor.

The NRT is a transformation theory which is based on voice-leading and common tones rather than on harmonic function and root progression to explore the coherence between triads. In order to connect two related chords by the transformations, they should be consonant triads separated by one or two notes, two chords should share one/two common tones, and they should undergo parsimonious voice-leading transformations. In addition to the application of the functional harmonic method, the NRT should be adopted to examine the harmonic content of Glass's works. The best way to evaluate the composition of the work is through the combination of functional harmony and the NRT. It arises to fill a gap in the romantic music analysis of the period, when one is not able to deal with the composers who reside within centralized tonality. The same is true with post-minimalist works; this theory may well apply to this kind of music and making it rational.

Minimalist composers are in favor of using mixtures of elements and involving crossover from style to style (such as in Steve Reich and La Monte Young's music). Glass's Symphony No. 1 ("Low") takes in the concept of classical music, combines it with the popular music element, makes use of additive rhythm inspired by the Indian *Tāla* and combines it with a Western harmonic language. Together with its use of cyclic structure, pulsations, and blocks of music textural changes over a static harmony, Symphony No. 1 ("Low") forms its own Glass's language that intrigues a variety of audiences.

CHAPTER FIVE

AARON JAY KERNIS — *Symphony in Waves*

5.1. Theoretical Framework

The last piece I will discuss is *Symphony in Waves* (1989) by American composer Aaron Jay Kernis. I will be focusing on the first movement, “Continuous Wave”, to discuss the importance of Kernis’s music in the world of post-minimalism. His official website presents a detailed description of his history. Born on January 15, 1960 in Philadelphia, he taught himself violin and piano since his childhood and started composing when he was thirteen. He eventually studied composition with John Adams at the San Francisco Conservatory, and followed with Charles Wuorinen of the Manhattan School of Music, and Jacob Druckman, Morton Subotnick, and Bernard Rands. During Kernis’s career as a classical composer, he received many awards and honors by the American Society of Composers, Authors and Publishers, Broadcast Music, Incorporated, the National Endowment for the Arts, the Guggenheim Foundation, and the New York Foundation of Arts. His “String Quartet No. 2, *Musica Instrumentalis* (1997)” won the Pulitzer Prize in 1998. He also received a commission from Disney to compose a choral symphony, *Garden of Light*, for Disney’s millennium celebration.

Furthermore, Kernis has been commissioned by many of the world’s leading ensembles and soloists, including the New York Philharmonic, Baltimore Symphony, and San Francisco Symphony. Some of these ensembles also gave premieres of his works. Additionally, Kernis has composed more than thirty pieces for the orchestra. These include *Symphony in Waves* (1989), *Musica Celestis* (1990), *New Era Dance for*

orchestra (1992), *Colored Field* (1994), *Air for Violin and Orchestra* (1996), and *Newly Drawn Sky* (2005).⁸⁶

Kernis's *Symphony in Waves* (1989) contrasts from the previously discussed works of John Adams and Philip Glass, as this symphony contains five movements, opposed to only three movements as seen in those works. However, the bridge between these works is that all three symphonies have precedents in the symphonic tradition. The basic formal structure of the first movement in *Symphony in Waves* is a rough sonata form in ABC. This movement, "Continuous Wave", features repeated patterns of flowing waves depicted by rapid notes in both a tranquil and energetic sensibility. It also features insistent repetitiveness, uninterrupted pulses, and non-extensive melodic lines. In this movement, Kernis showcases the influences of his teacher Adams. In revealing the importance of his appreciation for Adams, Kernis stated: "It was with great excitement that I came to know those early works of Adams's." Moreover, this work was commissioned by the St. Paul Chamber Orchestra in 1989, when John Adams was the creative chair and conductor of the orchestra. Later, Kernis once mentioned that the motivation for this work came from Adams, so this symphony is dedicated to Adams.⁸⁷

Kernis came to his appreciation for Adams's music after a conversation with Charles Wuorinen on minimalism.⁸⁸ Wuorinen, not a fan of the minimalist world, remarked that he, "wishe[d] that repetitive music had dramatic change." This idea struck

⁸⁶ Aaron Jay Kernis, "Biography," The Aaron Jay Kernis Official Website, accessed September 1, 2019, <https://aaronjaykernis.com/biography/>. See also Composers: Aaron Jay Kernis, September 2012, http://www.schirmer.com/default.aspx?TabId=2419&State_2872=2&composerId_2872=824.

⁸⁷ Letter from John Adams to Aaron Jay Kernis, March 23, 1988. Leta Miller, *Aaron Jay Kernis: American Composers* (Champaign: University of Illinois Press, 2014), 176.

⁸⁸ Ev Grimes, interview with Aaron Jay Kernis for the Yale Oral History of American Music Project, November 13, 1986.

a chord with Kernis. He then found the idea of dramatic changes in repetitive music one of the more fascinating aspects of Adams's music. In writing this thesis, I found that Adams hides everywhere in Kernis's work. The early works of Adams functioned as a model that guided Kernis's approach to using repetitive elements in his work and to adapting it to symphonic norms. He learned from Adams, who "was...pushing past Minimalism's inherent boundaries, molding its steady state, no-beginning-no-end quality into music with sensual surfaces and dramatic shapes that reflected romantic emotionalism."⁸⁹ Kernis also said John Adams has been a steady influence on him "because I've always liked his music so much. He helped commission *Symphony in Waves*, which was a very important work for me."⁹⁰

It was Adams's encouragement that stimulated Kernis's realization that instead of rejecting tradition as many modernists do, he would revive it and bring forth new ideas into tradition. Kernis explored minimalism during his college years, and he tried to introduce new elements into strict procedural structures,⁹¹ while keeping the use of ostinato patterns as an organizing principle, which he started using as a student. Kernis now owns several personal stylistic traits that still can be found in his recent works: mediant relationships, the linear lyrical melodic line, insistent repetitiveness, and continuity.⁹² He also works with several ostinato figures of different lengths interacting simultaneously. His music contains tonality, atonality, and some influences of pop-music

⁸⁹ John Adams and Aaron Jay Kernis, "John Adams: An Interview with Aaron Jay Kernis," *Conjunctions* 19 (1992): 175.

⁹⁰ Michael Anthony, "Aaron Jay Kernis," *American Record Guide* 60, no. 3(1997): 240.

⁹¹ Miller, *Aaron Jay Kernis: American Composers*, 3.

⁹² Miller, 17.

which are closely related to the complex structure of the overall form.⁹³ In *Symphony in Waves*, he demonstrated the use of tonality through triads and strong cadential punctuations, all in a highly dissonant context.

As described in his composer notes, *Symphony in Waves* was inspired by waves that come in different forms: water, sound, light, or the ebb and flow of waves and tides.⁹⁴ Although Kernis titled the piece, he believed the title does not represent a fixed impression of the *Symphony in Waves*. As Kernis, who has synesthesia, stated,

I tend not to be shy and to say, “Yes, I had this experience. I saw this color. I was present in this landscape.” I had my internal emotional picture world influenced by something that became a starting place for a piece. But when a listener comes up to me and says, “Oh, I saw that color when I heard the music; I imagined that place”—their own version, their own story, their own experience—that’s priceless.⁹⁵

From the title, *Symphony in Waves*, we can interpret not only the depiction of the sea, but also the various energy sources of wave motion. The wave crest and wave trough, the regularities and irregularities of wave frequency, and changes in wave density are all characteristics of this symphony. Although the same musical materials are repeated, with each repetition, there is something different from the last, which makes one look forward to the next repeat. This is how Kernis describes *Symphony in Waves* on his official website:

Prior to writing this work in 1989 I never imagined I would write a symphony. It seemed such an outdated and irrelevant form. But since that time I’ve become increasingly excited by the communicative potential, by the highly varied ideas and emotions, latent in traditional forms. I hope to find what ‘symphony’ means

⁹³ Carlo Boccadoro, “‘Non esiste una ricetta per scrivere’: Aaron Jay Kernis,” *Musica Coelestis* (Torino: Einaudi, 1999), 102–3 (translated by Giacomo Fiore with revisions by Aaron Jay Kernis).

⁹⁴ Miller, 55.

⁹⁵ Ibid, 56.

to me, to define the form for myself, by bringing my own experiences and passions to it.

I am not dealing with waves in a strictly programmatic sense. I think about waves of sound in addition to those of wind and water. Each movement uses some aspect of wave motion: swells and troughs of dynamics, densities, and instrumental color: the ‘sounds’ of light broken into flickering bits by water’s action.⁹⁶

A five-movement large orchestral work, *Symphony in Waves* lasts around forty minutes. The movements are as follows: I. Continuous Wave (10:05), II. Scherzo (4:08), III. Still Movement (15:08), IV. Intermezzo (1:59), and V. Finale (6:40). The music is written for orchestra but with smaller forces than the other two symphonies considered in this thesis.

⁹⁶ Aaron Jay Kernis, “Symphony in Waves (1989),” The Aaron Jay Kernis Official Website, accessed September 1, 2019, <https://aaronjaykernis.com/work/symphony-in-waves/>.

Table 5.1. The Form of Kernis, *Symphony in Waves*, First movement (“Continuous Wave”)

Sections	Measures and Track Time ⁹⁷	Measures and Track Time	Measures and Track Time
A	1–25 (0:00-2:09) (Introduction) C major	26–146 (2:10-4:09) B minor	147–193–217 (4:10-5:17) F-sharp minor/B minor
	1. Overlapping triads 2. Lyrical melody (foreshadowing both the ascending scale and the expressive melody)	1. Layering/ Accumulative Form 2. Ascending scale figure ostinato 3. Descending sustained note–melody	1. Superimposition 2. Ascending scale figure ostinato vs. syncopation
B	218–305 (5:18-6:48) (Transition 295–305) B-flat minor	306–378 (6:49-8:10) C major	379–401 (8:11-8:34) C major
	1. Lyrical melody 2. Ascending scale figure ostinato (in two rhythms) 3. Ascending scale figure ostinato in layers (in transition)	1. Cross rhythm/ syncopation 2. Superimposition 3. Changes in m. 356 (five rhythmic patterns)	1. Superimposition 2. Varied ascending scale figure ostinato in sextuplets and <i>glissando</i> (DB) 3. Syncopated notes return in m. 398
C	402–474 (8:35-10:05) E-major		
	1. Written out <i>ritenuto</i> of the ascending scale figure ostinato		

In the first movement, the large A section subdivides into three parts (Table 5.1): section A from mm. 1–219, section B from mm. 218–401, and section C from mm. 402–474. The piece begins with legato styles (mm. 1–25) and then, the layering of the music moves forward in mm. 26–146 and a gradual crescendo (mm. 147–217) to section B. The B section also subdivides into three parts, with the first part (mm. 218–305) featuring peaceful motions with a romantic lyric solo in the cellos. The music then moves to a driving motor rhythm (mm. 306–378) with an abrupt change in m. 356. It suddenly intensifies and accelerates at mm. 379–401 until the C section (mm. 402–474), featuring

⁹⁷ Conductor: Carlos Kalmar, Grant Park Orchestra. Cedille Records. Catalogue No: CDR105. UPC: 28943628723. 1992.

the use of diminuendo-crescendo-diminuendo, allowing the music to progress to a simulate climax and ultimately a final calm resolution.

Kernis once mistakenly thought that classical forms were, “outdated and not suitable for music of our time.”⁹⁸ Conversely, he sought a new direction in *Symphony in Waves*. He turned to tonality, and he decided to return to basics exploring them from a different angle. He found these basics of traditional music “rich in possibilities” and “conducive to the needs” of his musical language.⁹⁹ What attracts him most about traditional music is its emotion and lyricism, a trait we can clearly catch in his works.

5.2 Prominent Features

- 5.2.1 Influences from Adams

The work opens with sustained notes in the double-bass and horn; the first movement slowly unfolds into gestures of short waves undulating endlessly. Kernis sets this opening as the Introduction: *Liberamente*, and marks in the score also with a detailed footnote, “Bar lines inside of accelerating or decelerating passages for cello and viola are only approximations.”¹⁰⁰ From the beginning, Kernis therefore combines a twentieth century element of indeterminacy in his notation with evocative chromatic harmonies. The “waves” of overlapping arpeggio triads first appear in C major, then A-flat major, and then E major in third relationships. Shortly, at the end of m. 7, a solo cello melody

⁹⁸ Miller, 63.

⁹⁹ Aaron Jay Kernis, “Kernis: String Quartet No.1, ‘Musica celestis’,” program notes for the *Kernis Project: Schubert*. The Jasper String Quartet, May 29, 2012.

¹⁰⁰ Aaron Jay Kernis, *Symphony in Waves* (New York: Associated Music Publishers Inc, 1989), 1.

enters on top of the overlapping arpeggiated triads and later rises into a lyrical and legato theme. Example 5.1 illustrates his unique expressions. This romantic, lyrical solo occurs twice and resembles Adams's lyrical cello passage in the B section of the first movement in *Harmonielehre*. It first appears from the end of mm. 7 to 12. After a short reappearance of the beginning *Liberamente* section, the cello melody re-enters from the end of mm. 14 to 19 (see Ex. 5.2). Eventually, the violins take over the solo voice as the music becomes more contrapuntal. A high F-sharp played by the solo violin and solo viola an octave apart ends in m. 25, concluding the first part of the A section.

Musical Example 5.1. Kernis, *Symphony in Waves*, I (mm. 7–11)

Musical Example 5.2. Kernis, *Symphony in Waves*, I (mm. 15–19)

The beginning reminds us of Chapter 3 of this thesis. Kernis's uses of both romantic elements and post-minimal techniques resemble the B section in the first movement of Adams's *Harmonielehre*. Again, taking from Adams, Kernis uses overlapping arpeggiated triads, with the repetitive patterns of rapid triads flowing in waves as the music expands from peaceful to energetic.

Besides combining the post-minimalist techniques and romantic elements, Kernis controls pedal points as Adams did in the first movement of *Harmonielehre*.

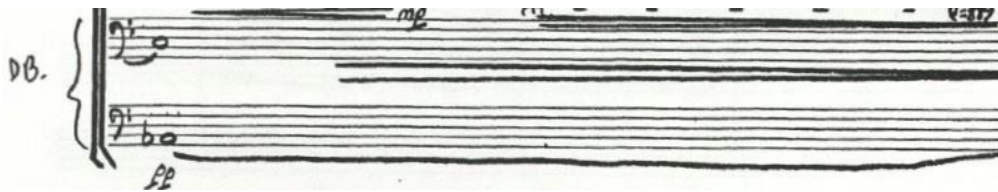
Musical Example 5.3. Kernis, *Symphony in Waves*, I (mm. 6–7)

The first measure uses a C-major triad as a pedal, and the third measure uses an A-flat major seventh chord. Then, an E-major chord is added to the A-flat major in m. 6 (see Ex. 5.3). These chord qualities are found in the strings and brass where strings play an A-flat major triad and horns play an E-major triad. In m. 7, an A-flat major chord is completely resolved to E-major and ends thus introducing the official beginning of the A section. Kernis deftly changes chords by pedal points to grow the scalar line by combining half and whole steps, again recalling the transformations of NRT. For

instance, the progression of the C-major chord (m. 1) to A-flat major chord (m. 3) uses the note G, which goes up a half step to A-flat. C stays still, and E descends a half step to E-flat. Another example is in m. 6, where the A-flat major chord moves to an E-major chord. Here, B goes up a half step to C, and E-flat goes up a half step to E-natural.

The intriguing phenomenon here is that pedal points are not just a way of prolonging a chord, but also are used as a transmitting tool (see Ex. 5.4).

Musical Example 5.4. Kernis, *Symphony in Waves*, I (m. 3 and m. 6)
m. 3



m. 6



In the double bass, every note is like the conductor's baton in that the first note continues to the beginning of the next measure, and then the next note takes over. The C of double bass continues to the beginning of the third measure, and a note A-flat takes over at the beginning of the sixth measure. Finally, an E takes over until the eighth measure.

Musical Example 5.5. Kernis, *Symphony in Waves*, I (mm. 26–33)

The image shows a musical score for the double bass (DB) part of Kernis's *Symphony in Waves*, I, measures 26-33. The score is written on a single staff in B minor, marked 'pp' (pianissimo) and 'unis.' (unison). The music consists of a series of slurs of increasing length (three, four, five, and six notes) in an ascending scale, suggesting the additive rhythms of Glass. The measures are numbered 26, 27, 28, 29, 30, 31, 32, and 33.

The music grows to *Presto* from the second part of the A section starting in m. 26 (see Ex. 5.5), where the texture thins out to only the double bass playing fragments of three-, four-, five-, and six-note slurs in rising B-minor scale ostinato patterns, suggesting the additive rhythms of Glass. Although the dynamic is marked as pianissimo, the fast and low strings create momentum that is waiting to expand. Then, each instrument joins one by one gradually in a rapidly ascending scale in an accumulative form, similar to the motion of waves upon waves. The second instrument layer, starting in m. 38, has the cellos joining this wavy ostinato group, then piano (m. 42), viola (m. 65), and finally bassoons (m. 74). The texture imitates the sea, with layer upon layer of waves creeping forward as the instruments gradually layer on top of each other. As this ostinato pattern continues, Kernis adds in a descending melody of B–A–E in contrary motion as the ascending ostinato gestures, carried out by a solo clarinet, two bassoons, and two horns at m. 96. At the same time, these instruments also act as the sustained line to empower the sound of the orchestra. The woodwind section, joined by pedal points in B-minor, plays while the strings continue the ostinato. It forms a preliminary superimposition form for the final part of the A section. After repeating several times, the B–A–E gesture continues

varying and transposing, and finally ends on the B–F–C-sharp an octave higher (m. 146), and the second part of the A section ends.

Musical Example 5.6. Kernis, *Symphony in Waves*, I (mm. 120–133)

The musical score for Kernis's *Symphony in Waves*, I, measures 120–133, is presented in two systems. The first system covers measures 120 to 126, and the second system covers measures 127 to 133. The score is in 3/2 time and features a complex rhythmic structure with a 3/2 and 2/2 time signature change. The instrumentation includes C1, B♭1, Horns 1 & 2, Trumpets, Percussion, Violins 1 & 2, Violas, Cellos, and Double Basses. The score shows a variety of musical techniques, including post-minimalist textures, lyrical melodies, and pedal points. The lyrics "cresc. poco a poco" and "cresc. poco a pace" are visible in the string parts.

In this section, Kernis demonstrates that in addition to his use of the post-minimalist techniques, his lyrical melody writing, and his use of the pedal points, he has

also learned rhythmic design from Adams. Throughout this movement, Kernis uses mixed meters, yet, when compared to his teacher, Kernis uses more common meters. As seen in example 5.6 above, m. 121 is in 3/2, and the next meter is 2/2, then the music is back to 3/2 in m. 133, and finally changes back to 2/2 again in the following measures.

As the third part of the A section begins, the music continues with a lighter orchestration — taking out the sustained line and the entire brass section. Here, the ostinato pattern is taken over by the woodwinds and the strings (except for double-bass), all in *divisi*, now carrying out a syncopated rhythmic line against the ongoing ascending scale ostinatos in a superimposed form. In m. 194, after Kernis has added in the horns with the syncopated line and the trumpet with the ostinato line, the orchestration changes again. Now, the ostinato is only heard in the marimba and piano while the rest of the orchestra, playing the syncopated notes, increases in volume into *fortissimo* until m. 216.

Musical Example 5.7. Kernis, *Symphony in Waves*, I (mm. 221–229)

The musical score for measures 221–229 of Kernis's *Symphony in Waves*, I, features the following instruments and markings:

- Violin 1 (Vn 1):** Ascending scale with a *p* dynamic marking.
- Violin 2 (Vn 2):** Ascending scale with a *p* dynamic marking in measure 225 and *pfp* in measure 226.
- Viola (Va.):** Ascending scale with a *p* dynamic marking.
- Violoncello Solo (Vc Solo):** Solo section starting at measure 225, marked *p Cantando*.
- Violoncello (Vc):** Ascending scale with a *p* dynamic marking.
- Double Bass (DB.):** Ascending scale with a *p* dynamic marking.

The measures are numbered 221 through 229 at the bottom of the score.

Musical Example 5.8. Kernis, *Symphony in Waves*, I (mm. 239–247)

The first part of the B section begins in m. 218, where the cello introduces a chain of romantic, lyrical, and melodious lines starting from m. 226 with the order F–G–A-flat–E-flat–G–E-flat (see Ex. 5.7) that recall the opening cello melody, demonstrating a kind of symphonic coherence. This melody line, which later continues with the solo viola (see m. 244 in Ex. 5.8), is in the shape of the beginning cello melody (F–G-flat–E-flat–B-flat–B-natural–C–F). The melody lines end with the solo violin and the solo viola an octave apart on F in m. 294, echoing how the first part of the A section was ended in m. 25 (with the solo violin and viola on F-sharp an octave apart). Akin to Adams in *Harmonielehre*, Kernis has the middle section as the home for more melodic material. Moreover, throughout this part of section B, he continues using materials that were introduced at the very beginning of the piece and varying them creatively. On top of the melody line, Kernis continues the eighth-note ostinato gesture quietly in the violins, flute, and clarinet. The piano and vibraphone are playing the ostinato in a different rhythm of quarter-note triplets. Here, Kernis adopts the same composition technique as Adams did: homophony and complementary configurations. Throughout this moving melody alternating between the solo cello, viola, and violin, the remaining ensemble is characterized by static orchestration and features ostinato loops at different speeds.

The rest of this movement will be discussed in the next section as a way of showing the eclecticism in Kernis's work.

- 5.2.2 “Everything” in His Music – Eclecticism

Kernis is often considered an eclectic composer.¹⁰¹ His sources vary from jazz, funk, rock, and romanticism to John Adams.¹⁰² This romantic, tonally inspired music is exemplified well by the Western musical heritage that extends from Mozart to the twentieth century, and particularly Jerry Lee Lewis, whom Kernis referenced in his *Symphony in Waves* in one performance instruction.¹⁰³

The uniqueness of Kernis's eclecticism lies in his mixture of contemporary variety and lyrical romanticism. Kernis was greatly influenced by Adams in this aspect. In his biography, *Aaron Jay Kernis*, Leta Miller mentions Kernis's eclecticism and its potential liabilities: “A number of reviewers over the years have questioned Kernis's embrace of stylistic diversity. Some critics looking for a consistent voice have been puzzled by his apparent eclecticism.”¹⁰⁴ The purpose of this thesis is to demonstrate that post-minimalism, as an aesthetic that would seem to run counter to the demands of the symphonic tradition, actually complements the conventions of the symphonic genre; in his combination of different kinds of materials, Kernis provides one response to the question of what a twentieth or twenty-first century symphony can encompass. Kernis

¹⁰¹ Composers: Aaron Jay Kernis, September 2012, http://www.schirmer.com/default.aspx?TabId=2419&State_2872=2&composerId_2872=824.

¹⁰² James Rushton, interview with the author, July 13, 2012.

¹⁰³ Miller, 57.

¹⁰⁴ *Ibid*, 5.

once had a conversation with Carlo Boccadoro discussing the diversity in his work in 1998:

Many of my young works were a crazy mixture of several things...I had this idea, which still interests me . . . that music should contain everything at the same time. Tonality, atonality, [and] pop-music influences went hand-in-hand with a complex structural planning of overall form, so that in a single work you could find minimalist patterns that turn suddenly into funk, romantic melodies that froze into static sonic strata, very dissonant passages orchestrated in a very pyrotechnical way.¹⁰⁵

Here, Kernis expresses his view that music ought to contain everything.

According to Kernis, modern and classical inspiration may appear in different works, but could also appear in the same work in different parts. Therefore, musical elements are not in conflict with one another, but are complementary. They associate with the composer's personal language and underlying aesthetic principles.

In showing his acceptance of modern musical language as well, Kernis maintains a contemporary use of scales. He adopts multiple scales at the same time instead of modulating into one particular key. At the end of the first part of the B section (mm. 300–305), the transition starts with fragments of ascending, chromatic scales to connect the first part to the second part. Beginning with the bassoons, then thickened with the oboes, clarinet, and horns and trumpet, this section is also reminiscent of the beginning of the second part of the A section (where the double basses enter first with the ostinato and the other strings join later). The use of chromatic pitches gives the section a sense of mystery.

¹⁰⁵ Boccadoro, “‘Non esiste una ricetta per scrivere’: Aaron Jay Kernis,” *Musica Coelestis*, 102-3.

Musical Example 5.9. Kernis, *Symphony in Waves*, I (mm. 300–305)

As seen in example 5.9, this passage is not just compelling because of the chromaticism. Horizontally, the pitches are mixed scales of hexatonic, octatonic, Lydian, Dorian and F-minor with a raised third scale degree; vertically, they are ascending parallel seventh chords which are close to the idea of linear chromaticism from the Romantic period. These seventh chords, changing in quality, eventually grow into six-note clusters. In other words, this passage involves a clear illustration of the combination of both chromatic and diatonic harmony. Kernis moves back and forth between diatonic and chromatic language, which is the same technique he used in his *Play Before Lullaby*, where he stated: “I used it more often in this piece as a contrast to the diatonic.”¹⁰⁶

Besides modern concert music, Kernis mentioned that some of his music contains elements of popular music and jazz. Although *Symphony in Waves* does not come across as jazz because the rhythms do not follow dance-like patterns, it does suggest the influence of rock music. It employs syncopation, where unexpected rhythms lie on the off-beat, as the main element. Two significant parts in this movement that use

¹⁰⁶ Joy Thurmon, “Influences and Musical Quotation in the Solo Piano Works of Aaron Jay Kernis,” (DMA diss., Florida State University, Tallahassee, 2014), 24.

syncopation are the last part of the A section from mm. 147–217 (see Ex. 5.10) and the middle part of the B section from mm. 306–378 (see Ex. 5.11).

Musical Example 5.10. Kernis, *Symphony in Waves, I* (mm. 158–165)

Musical score for Musical Example 5.10, showing measures 158–165. The score includes parts for Flute (Fl.), Oboe (Ob.), Clarinet (Cl.), Bassoon (Bn.), Trumpet (Tpt.), Violin 1 (Vn.1), Violin 2 (Vn.2), Viola (Va.), Violoncello (Vc.), and Double Bass (DB). The music features a complex rhythmic pattern with syncopation and a 'cresc. poco a poco' marking. A box labeled 'H' is present in the Trumpet part at measure 164.

Musical Example 5.11. Kernis, *Symphony in Waves, I* (mm. 322–329)

Musical score for Musical Example 5.11, showing measures 322–329. The score includes parts for Flute (Fl.), Oboe (Ob.), Clarinet (Cl.), Bassoon (Bn.), Horns (Horn 1 and 2), Percussion (Perc.), Violin 1 (Vn.1), Violin 2 (Vn.2), Viola (Va.), Violoncello (Vc.), and Double Bass (DB). The music features a complex rhythmic pattern with syncopation and a 'mf cresc. poco a poco' marking. A box labeled 'Q' is present in the Percussion part at measure 325.

While Adams writes ostinato lines against lyrical solo melodies, Kernis uses ostinato lines against syncopated rhythms. However, they are both using the same superimposition form.

Musical Example 5.12. Kernis, *Symphony in Waves*, I (mm. 182–189)

In the last part of the A section (mm. 147–217), Kernis demonstrates post-minimalist music's distinctive rhythm with interlocking rhythmic patterns and pulses that involve closely coordinated polyphonic exchange of repetitive motives between two parts (see Ex. 5.12). First started in m. 147, the syncopated pattern is played by the whole string section while the woodwinds are playing the ostinato pattern on top in the superimposition form. Then the syncopated line derives into three different parts with accents on different beats.

Musical Example 5.13. Kernis, *Symphony in Waves*, I (mm. 182–189)

From m. 181, the violin first and second violins are playing a different rhythmic pattern than the violas and cellos. Then horns are playing the third part of this syncopated

pattern (see Ex. 5.13). Furthermore, the three parts are also accented on different beats that occasionally meet. The passage of continuous eighth-notes is accented in a way that forms cross-rhythms in its hyperbeats.

Jim Cotter, an American writer, journalist, and broadcaster, discussed syncopation in an interview with Kernis. Cotter declared he believed it is both beautiful and modern. He likes the syncopated, driving rhythms. Kernis stated: “It’s very playful music that has that very light character.”¹⁰⁷ Further, a large amount of syncopation is reminiscent of rock music. Undeniably, the combination of musical syncopation in these two parts gives this movement an intense accent and inimitable rhythmic sensation. Other than his rhythmic design, another highlight of Kernis’s music is his use of the orchestra. Kernis maximizes the range of each instrument throughout the work.

Musical Example 5.14. Kernis, *Symphony in Waves*, I (m. 25)



Musical Example 5.15. Kernis, *Symphony in Waves*, I (mm. 396–400)

¹⁰⁷ Jim Cotter, “Interview with Composer Aaron Jay Kernis—Met Opera Principal Clarinet Anthony McGill—Composer Georg Philipp Telemann—Rosenbach Museum’s Civil War Project,” *WRTI Radio*, 2013, accessed September 10, 2019, <https://www.wrti.org/post/composer-aaron-jay-kernis-honored-delaware>.

Musical Example 5.16. Kernis, *Symphony in Waves*, I (mm. 284–292)

The musical score for measures 284-292 of Kernis's *Symphony in Waves*, I, features three staves: Violin 1 (Vn 1), Violin 2 (Vn 2), and Viola Solo (Va Solo). The music is characterized by a dramatic rise in pitch and dynamics. The Violin 1 part has a '1 Solo' marking. The dynamics range from 'fff' (fortissimo) to 'mp' (mezzo-piano). The score shows a wide range of notes, including high F-sharp (F#6) and high G-sharp (G#6).

Violins reach high F-sharp (F#6) in m. 25 (see Ex. 5.14) and a high G-sharp (G#6) in the last part of the B section (see Ex. 5.15). Eventually, the strings reach double high C (C7) in m. 292 (see Ex. 5.16), which is the highest pitch of the entire movement. The wide range of the strings exploited here by Kernis gives the wave-like figurations a dramatic sensibility.

Kernis's application of percussion is also worth mentioning, both for its color and its relationship with rhythm. In *Symphony in Waves*, Kernis use it skillfully for both purposes.

Musical Example 5.17. Kernis, *Symphony in Waves*, I (mm. 1–3)

mm. 1–2

The musical score for measures 1-2 of Kernis's *Symphony in Waves*, I, features a Percussion staff. The score shows a wavy line representing a sustained sound. The dynamic markings are 'Temp.', 'soft', and 'st. ck'. A bracket above the staff indicates a duration of 4''.

m. 3

The musical score for measure 3 of Kernis's *Symphony in Waves*, I, features a Percussion staff. The score shows a wavy line representing a sustained sound. The dynamic markings are '6''-7''' and '4''.

Musical Example 5.18. Kernis, *Symphony in Waves*, I (mm. 221–225)

Musical Example 5.19. Kernis, *Symphony in Waves, I* (mm. 468–474)

The image shows a page of handwritten musical notation for the first movement of Kernis's *Symphony in Waves, I*, specifically measures 468 through 474. The score is arranged in a standard orchestral format with multiple staves. At the top, there are staves for Horns 1, 2, and 3, and Trombone. Below these are the Piano and Percussion parts. The string section is represented by Violins 1 and 2, Violas, Cellos, and Double Basses. The notation is dense, with many notes, often forming ascending and descending scales. Dynamics such as *p*, *pp*, *fff*, and *dim.* are used throughout. Performance markings include *poco rall.*, *cresc.*, and *arco*. A 4/2 time signature is clearly visible in the lower middle section. The score concludes with a date 'Sept. 23, 1967' and a signature 'Kernis'.

Overall, Kernis's love of lush mediant progressions and his passion for lyrical melodies frequently took omnifarious forms in ascending and descending scales. Kernis even made them jump at their endpoints and habitually utilized the additive process causing variations to develop them. He continued the traditional Western music forms by using the formal structure of a symphony, while integrating the aesthetics of post-minimalism and avoiding precise repetition. Kernis, as he does with the larger form, when looking at small details, stays close to the tradition. In this movement, most of the

key relationships between sections have the key relationships of predominant, dominant, and tonic. Going from A2 to A3, Kernis has B-minor going to F-sharp minor in mm. 146–147, which is equivalent to a plagal cadence of iv-I. In mm. 193–194 going from F-sharp major to B-minor, we hear the familiar V-i relationship, and this appears again in mm. 217–218 when moving to the B section from F-minor to B-flat minor (v-i).

Kernis's writing masterfully blends an attraction to ostinato patterns aiding in development and musical evolution, his sensitivity to timbre reflected in his creative instrumentation, and equality shared among instruments on their individual stages. While Kernis requires the performers to be both technical and emotional, he also stimulates himself and his audiences through visual imagery, reflected in the piece's ambiguous title. Perhaps contradicting the idea of a symphony and in keeping with traditional minimalism, *Symphony in Waves* avoids moments with sharp edges, distinct contrasts, and dramatic climaxes. At the same time, it is firmly rooted in traditional harmony and contains long and lyrical melodies which keep the music moving and make it memorable. But in drawing on the idea of waves, Kernis also evokes a history of symphonic works that involve bodies of water, like Claude Debussy's *La Mer* or Jean Sibelius's Symphony No. 6. Simply put, this work suggests the ambiance of the sea: soft, carefree, boundless, and dreamy. The music appears to contain "Continuous Waves" that derive from the sea, and the beauty of the waves is breathtaking.

CHAPTER SIX

CONCLUSION

In this thesis, I explored the first movements of three post-minimalist symphonies: John Adams' *Harmonielehre*, Philip Glass's ("Low"), and Aaron Jay Kernis's *Symphony in Waves*. I demonstrated that minimalism, as an aesthetic that would seem to run counter to the demands of the symphonic tradition, actually complements the conventions of the symphonic genre. I defined the post-minimalist symphonic style through formal discussion and musical examples. I specifically focused on the first movement of Adams' *Harmonielehre* as the primary object of this style discussion and examined parallels with the first movements of Kernis's *Symphony in Waves* and Glass's *Symphony No. 1*. I did not provide comprehensive analyses of these pieces, but in my analysis on matters of form, structure, tonality, and the rhythm of each piece, I depicted how each composer's unique approach to the symphony manifested itself. Composers incorporate their minimalist heritage into their large-scale symphonic works, and in the context of a symphony, the extraordinary expressions of post-minimalist music replace the dramatic arc of sonata form. True to their minimalist heritage, the form of these works is substantially continuous, usually in the shape of uninterrupted rhythmic patterns overall flowing from the beginning to the end of the work. Sometimes these continuous forms grow gradually from a loose rhythmic framework or fade out after presenting to reach a climax ("Continuous Waves," the first movement of *Symphony in Waves* is one prime example). However, the noticeable polyphony is characteristic of post-minimalist styles, as these works often make use of complex layering.

Prior to the advent of minimalism, similar techniques had appeared in the early

twentieth-century. Similar features appeared in earlier works, such as the famous *Boléro* by Maurice Ravel in 1928;¹⁰⁸ it coincides with what became known as minimalist characteristics, such as the famous thematic melody in C repeated endlessly by different wind instruments passed among each other (although later parts of the repetitive melody shifted away from the C). Snare drums are responsible for the basic rhythm and serve as complementary configurations that constantly play an unchanging ostinato rhythm throughout the piece. Although the origin of minimalism was in the late twentieth-century, the composers in this study largely inherited the romantic style of the late nineteenth-century, including harmonically complex but tonal writing and standard orchestral instrumentation.

Besides key relationships, Kernis is also close with the traditional sonata form when looking at the detailed sections. Case in point, the first twenty-five introductory measures can also be seen as the introduction (which is also a crucial part of the traditional sonata form), as these twenty-five measures contain much of the materials that are later developed within the movement. Comparing *Symphony in Waves* with both *Harmonielehre* and Symphony No. 1 (“Low”), Kernis’s choice of instrument is closer to the classical era than the other two. Both of the other two works use a standard symphony orchestra setting from the romantic era whereas *Symphony in Waves* uses a much smaller orchestra. All three composers have written other symphonies. Glass is celebrated for his twelve symphonies; Adams, besides *Harmonielehre*, also wrote *Doctor Atomic Symphony* and *Scheherazade.2*: a dramatic symphony for violin and orchestra, among other works. Kernis has written four numbered symphonies so far. Besides these three composers,

¹⁰⁸ Arbie Orenstein, *Ravel: Man and Musician* (New York: Dover Publications), 99.

other minimalist composers are also interested in writing symphonies, such as Henryk Górecki and Arvo Pärt.

The simplicity of harmony, besides form and texture, is considered the most prominent feature in the post-minimalist style for its continuity. Many contemporary compositions are characterized by close proximity to complex harmonies, habitually using twelve-tone technique even in the shortest passages. Whereas composers only choose to use the simplest harmonies (oftentimes triads and seventh chords) mostly from diatonic scales and process these harmonies in extreme slow pace, it is not as slow as spectralist music. Horizontally, minimalist composers are more interested in writing small patterns with motor rhythm rather than luses of expressive melodies. The carefully organized, shaped, and composed ever-present repetitive rhythmic patterns are what makes minimalist music unique and interesting.

The current research on post-minimalist music, particularly in music theory, is limited, partly because it is still a relatively new aesthetic, and partly because standard techniques of music theory do not seem to lend themselves to large, relatively static structures. The NRT theory I proposed in this thesis, though I am not the first to apply it to minimalist or post-minimalist music, suggests one way of approaching a symphonic form in the post-minimalist symphony. Notice that in the first movement of Adams's *Harmonielehre*, he repeatedly uses SLIDE (ten times) in the A sections between E-minor and E-flat major. This SLIDE comes back at the end of the piece from mm. 567–595 when E-flat major is moving back to E-minor. In *Low*, as we have analyzed, Glass wrote many RL cycles starting from the last part of the B section employing the RL cycle in various voices. Further exploration will show whether these transformations can lead to

conclusions about these works' larger forms. My research here offers one starting point for the analysis of post-minimalist symphonic techniques, and of exploring ways in which these three composers have imported their aesthetic into the symphonic tradition. At the very least, it suggests that indeed minimalism has found a fruitful home in the post-minimalist genre of the symphony.

APPENDIX

TABLES

Table 1. Tonal Centers in John Adams' *Harmonielehre*.

Sections	Measure Numbers	Key Area
A (E-minor, E-flat major, B-minor, G-major)	1–58	E-minor
	59–63	E-flat major
	64–69	E-minor
	70–75	E-flat major
	76–77	E-minor
	78–83	E-flat major
	84	E-minor
	85–93	E-flat major
	94–96	E-minor
	97–101	E-flat major
	102–132	E-minor
	133–148	B-minor
	149–159	E-flat major
	160–165	G-major
	166–212	E-flat major
	213–253	G-major
B (E-flat major, D-minor, E-minor, B-flat major/minor, D-major)	254–283	E-flat major

	284–300	D-minor
	301–336	E-minor
	337–346	B-flat minor
	347–348	B-flat major
	349–412	D-major
	413–425	C-major chromatically descending
	426–434	G-minor
C (E-flat major, B-flat minor, G-flat major, E-minor, C-major, G-major, F-sharp minor, G-minor)	435–449	E-flat major
	450–453	B-flat minor
	453–458	G-flat major
	459–482	E-flat major
	483–487	E-minor
	488–499	E-flat major
	499–516	C-major
	517–524	E-flat major
	525–549	G-major
	549–561	F-sharp minor
	561–567	G-minor
	567–582	E-flat major
	582–595	E-minor

Table 2. Tonal Centers in Philip Glass' Symphony No. 1 ("Low").

Sections	Rehearsal Numbers	Key Area
A	1–9, 1A–9A, 10–14	F-sharp minor
	14–18	A-minor
	19–22	E-major
	22–23	A-major
	24–27	E-major or D-major
	27–29	E-major
	B	30–35
36–56		F-sharp minor
57–72		E-major and D-major
C	73	B-flat major (seventh)
	74	B-minor
	75–76	F-sharp minor and E-major
	77–78	B-flat major and C-sharp major
	79	B-flat major and C-sharp major
	80	A-flat minor
	End	On A without suggesting quality

Table 3. Tonal Centers in Kernis's *Symphony in Waves*

Sections	Measure Numbers	Key Area	Figured Chords
A (C, A-flat, E, D, B-flat, G Majors)	1–4	C-major	I
	5–6	A-flat major	VI
	7–11	E-major	III
	12	D-major	II
	13	B-flat major	Raised VII
	14–25	G-major	V
	26–38	B-minor	i
	38–42	C-minor	ii
	42–51	B-minor	i
	51–55	C-minor	ii
	55–65	B-minor	i
	65–74	C-minor	ii
	74–86	D-minor and D-major	iii
	87–96	A-flat minor	Equivalent to VI (G-sharp)
	96–104	B-minor	i
	105–110	C-major	II
	111–119	B-minor	i
	120–121	C-major	II
	122–125	B-minor	i
	126–131	G-major	VI
	131–134	A-major	VII
	134–136	B-minor	i

	137–140	E-major	IV
	141–146	B-minor	i
(F-sharp minor, A-minor, C-minor, F-Major, D-Major, E-Major, F-sharp Major)	147–152	F-sharp minor	i
	153–158	A-minor	iii
	159–163	F-sharp minor	i
	164–169	A-minor	iii
	169–170	F-sharp minor	i
	171–172	A-minor	iii
	172–175	C-minor	iii/iii
	175–176	F-sharp minor	i
	177	A-minor	iii
	177–180	C-minor	iii/iii
	180	F-major	Lowered V
	181–182	D-major	III
	182–184	E-major	IV
	184–186	D-major	III
	186–188	E-major	IV
	188–189	F-major	Lowered V
	189	D-major	III
	190–193	F-major and F-sharp major	Lowered V to V
(B-minor, C-minor, E-minor, F-sharp minor, F-minor)	194–196	B-minor	i
	196–198	C-minor	ii
	198–199	B-minor	i
	199–200	C-minor	ii
	201–203	B-minor	i
	204	C-minor	ii

	204–205	B-minor	i
	205–207	E-minor	iv
	207–208	F-sharp minor	R v
	208–209	F-minor	v
	209–211	F-sharp minor	R v
	211–212	F-minor	v
	212–214	F-sharp minor	R v
	214–217	F-minor	v
B (B-flat minor, F-minor, F-Major, D-flat Major, E-flat Major, g-sharp minor)	218–225	B-flat minor	i
	226–234	F-minor	v
	234–241	F-major	V
	242–249	D-flat major	III
	250–255	E-flat major	IV
	255–263	F-major	IV
	263–272	G-sharp minor	
	273–277	F-major	IV
	278–286	G-sharp minor	
	287–299	F-major	IV
	299–305	Chromaticism into the next section	
(C-Major, E-flat Major, E-flat minor, E-minor, G-minor, A-Major, B-Major, C-sharp Major, A-minor, F-Major, D-Major)	306–311	C-major	I
	311–319	D-sharp or E-flat major	Lowered III

	319–322	C-major	I
	322–327	E-flat minor	Lowered iii
	327–331	E-minor	iii
	331–339	G-minor	v
	340–342	A-major	VI
	342–344	B-major	VII
	344–348	A-major	VI
	348–353	C-sharp major	R I
	353–355	E-flat major	Lowered III
	356–361	A-minor	vi
	361–366	F-major	IV
	366–368	A-minor	vi
	369–370	F-major	IV
	371–373	D-major (seventh chord)	V/V
	373–375	D-sharp minor	R ii
	376–378	E-flat major	Lowered III
(C-Major, D-Major, E-Major)	379–391	C-major	I
	392–397	D-major	
	398–401	E-major	
C (E Major)	402–474	E-major	

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